# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0 e 4. Edition

supersedes 3.83 Renault company: F 8 M

# FestoiHSO 4113

VE 4/9 F 2400 R 95

0 460 494 105

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1400	4,1-4,5	mm		
1 2 Supply pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1 3 Full-load delivery without	1000	30,7-31,7	cm³/1000 strokes		2,5 (3,0)
charge-air pressure Full-load d <del>elivery with</del>	-	-	cm³/1000 strokes		
charge-air pressure  1 4 Idle speed regulation	425	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1 5 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes		
6 Full-load speed regulation	2650	10,5-16,5	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	1400	1 -		1	

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min	1000 2,3-3,1(2,0-3,4)	1400 (3,6 <b>-</b> 5,0)	2000 6,3-7,1(6,0-7,4)	2400 7,0-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgt/cm²)	600 2,5-3,1			2400 7,7-8,3
Overflow delivery	n = rev/mmn cm <sup>3</sup> /10 s	600 55-138(40-153)			2400 55-138(40-153)

2.3 Fuel delivenes		is an additional and a second a	1	3. Dimen	SIONS for assembly and adjustment
Speed control lever	Rot speed		arge-air press (kgf/cm²)	Designation	mm
End stop	2750	max. 6,0 (9,5-17,5)		: K	3,2-3,4
	2650 2500	21,0-29,0 (21,0-29,0)		KF	5,7-5,9
	2400	27,5-30,1 (26,5-31,1) 28,9-31,3 (27,8-32,4)		MS	1,2-1,4
	2100 1400 1000	31,7-33,7 (30,4-35,0) (28,9-33,5)		svs	2,8
	600	25,2-28,2 (23,7-29,7)	•		:
	-			<b>XK</b>	18,7-20,7
switch-off	2400	0		٨L	9,5-12,8
Idle stop	650 600 425	0 0,2-5,2 (4,0-12 <sub>2</sub> 0)		Observations Please notions on	ote instruc- sheet 2.
End stop	330 500	min. 30,0 max. 29,0			

BOSCH

2.4 Solenoid

mex cut-in voltage XXX min. 10,0 V

wxxxxxxxxx rated voltage 12V.

Testing the hydr. cold-start accelerator:

Apply 12 V to expansion element of hydr. cold-start accelerator.

At 300 1/min there must be a timing-device travel of 1.3- 3.3 mm.

## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 a

3. Edition

En

VE 6/10 F 2400 L 116 0 460 406 018 supersedes 10.83 company: VWW engine: 087 - T

see VDT-W-460/...

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

estoil-ISO 4113

Pre-stroke setting -	mm			300 101 11 100	
1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,4-1,8	mm	0,75	
1 2 Supply pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without	600	26,5-27,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery with	1500	44,0-45,0	cm³/1000 strokes	0,75	2,5 (3,0)
charge-air pressure 1.4 Idio speed regulation	415	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 42,0	cm³/1000 strakes	0	
1.6 Full-load speed regulation	2675	10,0-16,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery					•
41		;		,	

2. Test Spec	itications	checking values in b	rackets ( )			
2.1 Timing device LDA=0,75 bar	n = rev/min mm	1200 0,2-1,0(0-	1200 0,2-1,0(0-1,3) 1500 (0,9-2,3)			00 3,8-5,2)
2.2 Supply pump LDA=0.75 bar	n = rev/min bar (kgf/cm²)	600 3,3-3,	600 3,3 <b>-</b> 3,9			00 3,7
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-	600 55-138(40-153)			00 (0,75 bar) 40-153)
2.3 Fuel deliveries		,			3. Dimer	ISIONS: for assembly and adjustment
Spead control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	111011
End stop	2850 2675	max. 4,0	(9,0-17,0	0,75 0,75	K	3,2-3,4
	2400	35,5-37,5	(34,2-38,8)		KF	6,3-6,6
	1500	33.5-34.5	(42,2-46,8) (31,0-37,0)		MS	1,7-1,9
	800 <b>*</b> 600	55,5-54,5	(24,0-30,0		SVS	2,4
***************************************					AK K	21,8-23,8
switch-off elektr.	400	0			eXL	9,4-12,7
Idle stop	415 600	max. 3,0	(4,0-12,0	)	Observations	- Puos sumo
End stop	400 500	min. 20,0 max. 30,0			compensa = 4,2 m Correcti	l-pressure tor stroke n on at the g nut. (46)
2.4 Solenoid	mex. cut-in voltage	<pre>xxx min. rated volta</pre>				

## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 d

3. Edition

VE 6/10 F 2400 L 116-1

0 460 406 019

supersedes 10.83 company VWW engine 087 - T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

**Testoil-ISO 4113** 

Pre-stroke setting	mm			see VDT-W-460/		
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1500	1,4-1,8	mm	0,75		
1 2 Supply pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75		
1.3 Full-load delivery without charge-air pressure	600	26,5-27,5	cm <sup>3</sup> /1000 strokes	. 0		
Full-load delivery with charge-air pressure	1500	44,0-45,0	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)	;
1.4 Idle speed regulation	415	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)	
1.5 Start	100	min. 42,0	cm <sup>3</sup> /1000 strokes	0		,
1.6 Full-load speed regulation	2675	10,0-16,0	cm <sup>3</sup> /1000 strokes	0,75		
1.7 Load-dependent start of deliver	v <sup>1</sup>					

2.1 Timing device	n = rev/min	1200		1500	2400	:
LDA=0,75 bar	mm	0,2-1,0(0-	1,3) (0	,9-2,3)	4,1-4,9(3,	8-5,2)
2.2 Supply pump	n = rev/min	600			2400	
LDA=0,75 bar	bar (kg1/cm²)	3,3-3,9			8,1-8,7	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40	-153)		2400 55-138(40	(0,75 bar) -153)
2.3 Fuel delivenes	•	<del>- <u>:                                     </u></del>			3. Dimer	nsions
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment
End stop	2850	max. 4,0	(0.0.47.0)	0,75	к	3,2-3,4
	2675 2400	35,5-37,5	(9,0-17,0) (34,2-38,8)	0,75 0,75	KF	6,3-6,6
	1500	i	(42,2-46,8) (31,0-37,0)	0,75 0,30	MS	1,7-1,9
	800 <b>*</b> 600	33,3-34,5	(24,0-30,0)	0,50	svs	2,4
					AXK	21,8-23,8
switch-off mech.	2400	0			BXL	9,4-12,7
elektr.	400	0			BAL	3,4-12,7
idle stop	415 600	max. 3,0	(4,0-12,0)		Observations	
End stop	400 500	min. 20 max. 30			compensa = 4,2 mm Correcti	on at the
2.4 Solenoid		max. 30			= 4,2 mm	n on at

Testoil-ISO 4113

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 i 1

2. Edition

VE 5/10 F 2250 L 133 0 460 405 031

supersedeZ.83 company:VWW engine 153 T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting

± 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,1-3,5	mm	0,75 bar	
1 2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75 bar	
1.3 Full-load delivery without	500	21,5-22,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery with	1500	43,5-44,5	cm <sup>3</sup> /1000 strokes	0,75 bar	2,5 (3,0)
charge-air pressure  1 4 idle speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1 5 Start	100	min. 50,0	cm <sup>3</sup> /1000 strokes	0	
1 6 Full-load speed regulation	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75 bar	in the second
t 7 Local december start of delivery					

2. Test Spec	ifications	checking values in brackets (	•	
2.1 Timing device LDA:0,75 bar	n = rev/min	850 1,1-1,9(0,8-2,2)	1500 (2,6-4,0)	2250 5,4-6,2(5,1-6,5)
2.2 Supply pump LDA:0,75 bar	n = rev/min	500 3,2-3,8		2250 7,3-7,9
Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-153)		2250 55-138(40-153)
	<u> </u>	<u> </u>		

	Cm-/10 S					
2.3 Fuel deliveries	<u>.</u>	•			3. Dimer	1SiONS for assembly and adjustment
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgt/cm²)	Designation	mm
End stop	2700 2525	max. 3,0	(8,0-16,0)		K	- 5,7-6,0
	2250 1500 * 850	37,0-39,0 32,5-33,5	(41,8-46,2) (30,8-35,2)	0,75 bar 0,3 bar	KF MS	1,7-1,9
	500		(19,0-25,0)	0	svs	4,2
switch-off elect.	400	0			A B	
Idle stop	375 400 **1125	max. 3,0 20,5-22,5	( 4,0-12,0)		Observations	
End stop	400 500	min. 18,0 max. 25,0			Please no tions on	ote instruc- sheet 2.
2.4 Solensid	max. cut in voltage	The last walks	10 V ige 12V.			

BOSCH

Adjust TAS only at full LDA pressure of 0.75 bar.

- \*\* Adjust EGR with gauge.
- \* Manifold-pressure compensator stroke = 3,6

Correction at the adjusting nut. (46)

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 6 1. Edition

VE 4/9 F 2250 R 134-4 0 460 494 137

supersedescompany: VWW enguna: 086 T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting	-	mm	see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,2-3,7	तिमा	0,75	
1 2 Supply pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery without	600	22,5-23,5	cm <sup>3</sup> /1000 strokes	0	!
charge-air pressure Full-load delivery with	1500	42,5-43,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
charge-air pressure 1 4 idle speed regulation	475	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1.5 Start	100	min. 35	cm2/1000 strokes	0	
1.6 Full-load speed regulation	2525	9,0-15,0	cm-/1000 strokes	0,75	
1.7 Load-dependent start of delivery	-			;	1

2. Test Spec	ifications	checking values in brackets (	1 .	
2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar		1,3-2,1(1,0-2,4)	(2,8-4,2)	6,0-6,8(5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA=0.75 bar	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev(min cm <sup>3</sup> /10 s	600 (0 bar) 55-138(40-153)		2250 (0,75 bar 55-138(40-153)

	cm <sup>3</sup> /10s			•		
2.3 Fuel delivenes					3. Dimer	1SiONS tor assembly and adjustment
Speed control lever	Rot speed revimin	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	mm
End step	2750 2525	max. 3,0	( 8,0-16,0)	0,75 0,75	к	3,2-3,4
	2250	38,0-40,0	(36,7-41,3)		KF	5,7-6,0
	1500		(40,7-45,3)		MS	1,2-1,4
	* 1000 600	32,5-33,5	(30,7-35,3) (20,0-26,0)		svs	3,2
					<b>A</b>	
elektr.	400	0			<b>B</b>	
Idie stop	475		( 4,0-12,0)		Observations Please no	ote instruc-
**	1200 1125	max. 4,0 22,0-24,0				sheet 2.
End stop	400 500	min. 21 max. 29				
2.4 Solenoid	mex. cut-m volts		10 V ge 12V.			

- \* Manifold-pressure compensator stroke = 4.0
- \*\* Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

Testoil-ISO 4113

# **Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,4 1

1. Edition

VE 6/10 F 2400 L 144

company

0 460 406 029

VWW 087 T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump To.. Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

see VDT-W-460/.

1. Settings	Rot. speed Settings rev/min			Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	1,2-1,6	mm	0,75 bar	
1.2 Supply pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75 "	
1.3 Full-load delivery without	600	25,5-26,5	cm <sup>3</sup> /1000 strokes	0 "	
charge-air pressure Full-load delivery with	1500	44,0-45,0	cm <sup>3</sup> /1000 strokes	0,75 "	2,5 (3,0)
charge-air pressure  1.4 Idle speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes	0 "	2,0 (3,0)
1.5 Start	100	min. 42	cm <sup>3</sup> /1000 strokes	0 "	
1.6 Full-load speed regulation	2600	10,0-16,0	cm <sup>3</sup> /1000 strokes	0,75 "	
1.7 Load-dependent start of delivery	-			3	

2. Test Spe	cifications	checking values in bra	ickets ( )			
2.1 Timing device LDA = 0,75 b	U = Len/WIU			2000 20 4(3,3-4,7) (		400 (5,3-6,7)
2.2 Supply pump LDA = 0,75 b	n = rev/min		500 8-7,4 8	2400 ,1-8,7		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 ba 55-138(40-1		2400 (0,75 ba -138(40-153)	ır)	
2.3 Fuel deliveries					3. Dimens	for assembly
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
switch-off elect.	2750 2600 2400 1500 **800 600	35,0-37,0(33 (42 32,5-33,5(30	2,2-46,8)	0,75 0,75 0,75 0,75 0,3	K KF MS SVS **LDA-Hub A B	3,2-3,4 6,3-6,6 1,7-1,9 max.6,0 5,3
End stop	375 450 400 500	max. 3,0 min. 20 max. 30	,0-12,0)		Observations Please not tions on s	e instruc- heet 2.
2.4 Solenoid	max. cut-in voltage	xxx min.	10 V 12V.			

\* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.

1500 1/min 3,0 - 4,0 (2,8 - 4,2) 2000 1/min 4,9 - 6,1 (4,8 - 6,2)

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2.4 1 1 1. Edition

VE 6/10 F 2400 L 144-1

0 460 406 030

supersedes company

**VWW** 087 T enqine

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting	mm		see VDT-W-460/			
1. Settings	Rot speed Settings rev/min			Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1.1 Timing device travel	1500	1,2-1,6	mm	0,75 bar		
1 2 Supply pump pressure	1500	5,7-6,3	bar (kgf/cm²)	0,75 "		
1.3 Full-load dailvery without	600	25,5-26,5	cm3/1000 strokes	0 "		
charge-air pressure Full-toad delivery with charge-air pressure	1500	44,0-45,0	cm²/1000 strokes	0,75 "	2,5 (3,0)	
1.4 Idle speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes	0 "	2,0 (3,0)	
1.5 Start	100	min. 42	cm <sup>3</sup> /1000 strokes	0 "		
1 6 Full-load speed regulation	2600	10,0-16,0	cm <sup>3</sup> /1000 strokes	0,75 "		
1.7 Load-gependent start of delivery	_	į				

2. Test Spec	cifications	checking values i	n brackets (	I	)		
2.1 Timing device LDA = 0,75 ba	n = rev/min ][mm	1500 (0,7-2,1)	1500 (*)	3,6-4	2000 ,4(3,3-4,7	2000	2400 5,6-6,4(5,3-6,7)
2.2 Supply pump LDA = 0,75 ba	n = rev/min 3)toar (kgf/cm²)	600 3,3-3,9	*1500 6,8-7,	.4	2400 8,1-8,7		
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 (0 55-138(4			2400 (0,75 55-138(40	5 bar) -153)	
2.3 First deliveres		<u> </u>				3	. Dimensions

2.3 Fuel delivenes				3. Dimen	for assembly
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	: Designation	and adjustment mm
End stop	2750 2600 2400 1500 **800 600	max. 4,0 (9,0-17,0) 35,0-37,0(33,7-38,3) (42,2-46,8) 32,5-33,5(30,7-35,3) (23,7-28,3)	0,75 0,75 0,75 0,75 0,3	K KF MS SVS **LDA-Hub	3,2-3,4 6,3-6,6 1,7-1,9 max.6,0
switch-off Mech. elektr.	2400 400	0		8	
End stop	375 450 400 500	(4,0-12,0) max. 3,0 min. 20 max. 30		Observations  Please note instructions on sheet 2.	
2.4 Solenoid	max. cut-in voft	xxx min. 10 V xrated voltage 12V.			

\* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.

1500 1/min 3,0 - 4,0 (2,8 - 4,2) 2000 1/min 4,9 - 6,1 (4,8 - 6,2)



# Test Specifications Distributor-type Fuel-injection Pumps

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WPP 001/4 VWW 2,4 1 3 1. Edition

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VE 6/10 F 2400 L 146

0 460 406 033

supersedes

company VWW engine: 087

Overflow temperature 45° C

All test specifications are valid only for Boach Fuel-riljection Furno Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting = mm see \

588 VDT-W-4604 .

1. Settings	Rot. speed Settings ·			Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	2,8-3,2	mm		
1 2 Supply pump pressure	1500	5,2-5,8	bar (kgi/cm²)		1
1.3 Full-load delivery without	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
Full-load delivery with charge air pressure	-	-	cm³/1000 strokes		
1.4 Idie speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strakes		2,0 (3,0)
1.5 Start	-100	min. 35	cm³/1000 strokes		
1 6 Full-load speed regulation	2700	6,0-12,0	cm³/1000 strakes		
1.7 Load-dependent start of delivery	-				
	1				

2. Test Spe	cifications	checlung values in brack	ets (	)		
2.1 Timing device	ww.	750 0,2-1,0(0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,8-3,4	*1500 6,3-6,9	7	2400 ,7-8,3	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)	)	55-13	2400 38(40-	153)

2.4 Solenoid	man. cut-m vot	bege xxx min. 10 V	
End stop	400 500	min. 20 max. 25	
Idle Stop	375 600	(4,0-12,0) max. 4,0	
switch-off elect.	400	0	
End slop	2825 2700 2400 1500 750	max. 3,0 (5,0-13,0) 22,0-24,0(20,7-25,3) (26,7-31,3) 26,0-29,0(24,5-30,5)	
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kg1/cm²)
2.3 Fuel delivenes			

•	
3. Dimen	Sions for assembly and adjustment mm
К	3,2-3,4
KF	6,4-6,7
MS	1,5-1,7
svs	3,6
A B	
Observations	
Please no tions on	ote instruc- sheet 2.

Bosch

\* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.
750 1/min 1,2 - 2,4 (1,1 - 2,5)
1500 1/min 3,7 - 4,7 (3,5 - 4,9)

## Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,4 1 2 1. Edition

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VE 6/10 F 2400 L 146-1

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0 460 406 034

company. VWW engine: 087

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

roke setting mm see VDT-W-460/...

re-strake setting				····	!
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Tirning device travel	1500	2,8-3,2	mm	1	
1 2 Supply pump pressure	1500	5,2-5,8	bar (kgf/cm²)	•	1
1.3 Full-load delivery without	1500	28,5-29,5	cm <sup>3</sup> /1000 strokes	:	2,5 (3,0)
charge-air pressure Full-load delivery with	-	-	cm <sup>3</sup> /1000 strokes		
charge-air pressure  1.4 idle speed regulation	375	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1.5 Start	100	min. 35	cm³/1000 strokes		
1 6 Full-load speed regulation	2700	6,0-12,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery	-	:			

2. Test Spe	cifications	checking values in bracke	ets (	)		
2.1 Timing device	n = rev/min	750 0,2-1,0(0-1,3)	750 (*)	1500 (2,3-3,7)	1500 (*)	2400 5,7-6,5(5,4-6,8)
2.2 Supply pump	n = rev/min ber (kgf/cm²)	600 2,8-3,4	*1500 6,3-6,9	7	2400 ,7-8,3	}
Overflow delivery	n = rev/min cm³/10 s	600 55-138(40-153)	)	55-1	2400 38(40-	153)
	!					O Dimanalana

2.3 Fuel delivenes	<u> </u>			3. Dimer	SIONS for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge air press bar (kgt/cm²)	Designation	mm
End stop	2825 2700	max. 3,0 (5,0-13,0)		к	3,2-3,4
	2400	22,0-24,0(20,7-25,3)		KF	6,4-6,7
	1500 750	(26,7-31,3) 26,0-29,0(24,5-30,5)		MS	1,5-1,7
	750	: 20,0-25,0(2+,0-00,0)		svs	3,6
	:		:		
switch-off				` A	
swich-off mech. elektr.	2400 400	0		8	
Idle stop	375	(4,0-12,0)		Observations	
	600	max. 4,0			
End Stop	400	min. 20		1	ote instruc- sheet 2.
	500	max. 25		010113 011	JIICG E.
2.4 Sciencid	mex. cut-in vol	tege xxx min. 10 V xrated voltage 12V.			

\* Test hydr. cold-start accelerator:
At the designated points do not apply voltage to magnet of hydr. cold-start accelerator.
750 1/min 1,2 - 2,4 (1,1 - 2,5)
1500 1/min 3,7 - 4,7 (3,5 - 4,9)

40

WPP 001/4 RAB 9,7 & 1

1. Edition

En

PES 6 A 95 D 410 RS 2108 RSV 450-1000 A 1 B 2004 DL Komb.-Nr. 0 400 876 266

supersedes Raba

engine =

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(1,65-1,85)

mm (from BDC)

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm=/100 strokes	Spring pre-tensioning (torque-control valve) mm
1000	11,1+0,1	10,8 - 11,0	0,3(0,6)			
450	5,9-6,1	1,1 - 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	control rod travel mm rev/min	Intermed	diate rate	speed 6	Control- lever deflection in degrees 7	Lower	rated speed Control rod travel mm	3 To rev/min 10	rque control Control rod travel mm
loose	800 x = 4	0,3-1,0 1,5	-	•	-	ca. 34	450 100 450	5,5 min.19,0 5,9-6,1	1000 800 500	11,1-11,2 12,5-12,7 12,6-12,8
ca. 59	10,1 4,0 1200	1040-1050 1085-1115 0,3-1,7						5= 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

ピツ	il-load stop	6 Rotational- speed limitat	16.53411	el delivery aractenstics	Starting f	uel delivery 5	4a Idle	e stop
rev/min	cm <sup>2</sup> /1000 strokes	Note changed to ) rev/min 3	rev/min	cm=/1000 strokes 5	rev/min	cm=1000 strokes 7	revimin 8	travel mm 9
1000	107,5-109,5 (105,5-111,5)	1040-1050*	800 500	124,5-129,0 (122,5-131,0) 125,5-129,5 (123,5-131,5)	~	_	450	5,9-6,1

Checking values in brackets

1 mm less control rod travel than col 2

12.83



WPP 001/4 TOP 19,0 a 2. Edition

PE 12 A 85 D 610 RS 2141

RSV 200-1100 A1B 253 DL

supersedes 6.83

Torpedo

Komb.-Nr. 0 400 670 005

T 519

1-12- 4- 9 - 2 - 11- 6 - 7 - 3 - 10- 5 - 8 0-45-60-105-120-165-180-225-240-285-300-345 $^{\circ}$   $^{+}$  0,5 $^{\circ}$  ( $^{+}$  0,75 $^{\circ}$ ) All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,15-2,25 (2,10-2,30)

mm (from BDC) RW = 9.0-12.0 mm

Rotational speed	Control rod	Fuel gelivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>2</sup> / 100 strokes 4	inm 2	cm·/100 strokes 3	mm 6
1000	12,4+0,1	8,7-8,8	0,3(0,45)			1
500	12,8+0,1	8,2-8,4		·		
			1			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	r rated speed Control rod travel mm	Control rod travel mm rev/min	Interme	ediate rate	speed 6	Control lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	(3)	rque control Control rod travel mm
loose	800 X =	0,3-1,0 6,0	-	_	-	ca.24	200 100 200	5,5 min.19,0 5,9-6,2	1000 500 800	12,4-12,5 12,8-12,9 12,7-12,9
ca.55	11,4 4,0 1250	1040-1050 1155-1185 0,3-1,7					420-480			

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

ピツ	uil-load stop	6 Rotational-speed limitat 38 Fuel delivery characteristics			Starting fi Idle	uel delivery 5	(4a) Idle stop		
Test oil ti revimin 1	emp 40°C (104°F) cm³/1000 strokes 2	Note changed to ) rev/min	revin in	cm=/1000 strokes	rev/min	cm=1000 strokes	rev/min 8	travel mm 9	
1000	86,5-87,5 (84,5-89,5)	1040-1050*	500 700	82,0-84,0 (80,0-86,0) 87,5-90,5 (85,0-93,0)	-	-	-	-	

Checking values in brackets

# 1 mm less control rod travel than col 2

12.83

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 
§ 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en République Federale d. Allemagne par Robert Bosch GmbH.

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WPP 001/4 MB 5,7 q 2

Εn

PES 6 A 90 D 410 RS 2293

RSV 350-1300 A 0 B 783 L

supersedis 3.83

company Daimler-Benz

engine OM 352 A

110 kW (150 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Fort closing at prestroke

**Festoil-ISO 411** 

(2,10-2,30)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
revimin	mm 2	cm\100 strokes	cm³r 100 strokes 4	mini 2	cm\$100 strokes	nim
1300	11,4-0,1	7,7-7,7	0,3(0,45)			
350	7,3-7,5	1,0-1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

1 Uppe	rifated spee	d rev/min	Interme	diate rateo	speed	(4)	Lowe	rated speed	1(3)	rque control
Degree of deflection of control lever	Control rod travet mm 2	Control rod fravel mm rev/min 3	-2	5	6	Control lever deflection in degrees 7	rev.min	Control rod travel mm	(6Astunio	Control rod travel mm
loose	800	0,3-1,0	-	-	-	loose	350	7,4	1300	11,4-11,5
	X =	3,5					100 350	min.19,0 7,3-7,5	800 1050	11,7-11,8
ca.62	10,0 4,0 1600	1340-1350 1460-1490 0,3-1,7					570-	630=2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(29)	emp 40 C (104 F)	Rotational- speed limital changed to 1 rev/min 3	11.321	cel delivery naracteristics cm <sup>3</sup> r1000 strokes	Starting findle	uel delivery 5 cm <sup>9</sup> 1000 strokes 7	40	Control rod travel mm
LDA 1300 LDA 800	0,7 bar 75,5.76,5 (73,5-78,5) 0,7 bar 67,0-69,0 (64,5-71,5)	1340~1350*	LDA 500 LDA 500	0,7 bar 62,0-64,0 (59,5-66,5) 0 bar 50,0-52,0 (47,5-54,5)	100	78,0-88,0 (75,0-91,0 = 15,1 - 15,5mm RV		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83



# D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 q 2

- 2 -

est at n = 500	rev/min decreasing pressure - in i	bar gauge pressure	
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES 6 A RS 229 +RSVAOB 783 L	0,7	0 0,39 0,28	11,7-11,8 10,7-10,8 11,4-11,5 10,9-11,1

Notes.

(1) when n =

rev/min and gauge pressure =

par (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at 0,40 - 0,50 bar Unlocking at 0,15 - 0,25 bar

and Governors

WPP 001/4 MB 5,7 q

Edition 3.

En

EP/RSV 350-1400 AO B1080DL(1) PES 6 A 90 D 410 RS 2293

RS2293

350-1425 A2 B1028DL(2)

RS2293 RS2293Z 350-1400 AO B 745L (3)

350-1400 AO B 745L (4)

supersedes4.78

Daimler-Benz company

OM352 (A) encine

92kW (125PS - 1-2)

115kW (156PS - 3) 123kW (168PS -

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres		2,15-2,25 (2,10-2,30)	mm (from BDC)	mm (from BDC)							
Rotational speed	Control rod travel mm	Fuel delivery cm*/100 strokes 3	Difference cm <sup>2</sup> / 100 strokes 4	travel mm 2	Eggi denvery cm <sup>1/100</sup> strokes 3	Spring pre-tensioning (torque-control valve) mm					
1000	9	4,5 - 5,0	0,3(0,45)								
200	6 12 9	1,8 - 2,6 7,3 - 8,2 2,0 - 2,8									

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1080DL (1	)	)
-----------	---	---

Upper Degree of deflection of control lever	rated speed rev/min	Control rod travel mm	intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	ed Control rod travel mm 9	(3) Tor	cue control Control rod travel mm
ca.67	1400 1450 1500	16,0 11,4 5,5	without	auxo	liary spri	ca.20	350 100 350	9,2 19 - 21 8,9-9,5	1380 600	0,2-0,3
5	1470 1520 1640		1		ry spring		500 700	3,6-6,2		

The numbers denote the sequence of the tests

### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	ad stop	6 Rotational- speed limitat.		el delivery eracteristics	Starting	fuel delivery	(5a) idle stop		
Test oil tem; rev/min 1	. 40°C (104°F) cm³/1000 strokes	Note changed to rev/min	rev/min	cm³/1000 strakes	rev/min	2 mm R	rev/min 8	travel mm	
(1) 1400	63,0 - 64,0 (61,0 - 66,0)	1450-1460*	600	51,0 - 53,0 (49,0 - 55,0)		14,7-1 -1540 =			

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B.** Governor Settings

	rated speed	Control rad travel	Intermediate Degree of deflection of control lever	rated spe	Control rod travel mm	4 Lower Degree of gellection of control lever	rated spe revimin 8	ed Control red travel mm		que control Control rod travel mm
ca.60	1425 1500 1560	16,0 11,5 6,5	]		liary spr		350 200 350	7,5 19 - 21 7,2-7,8	1400 800	0
5	1500 1600 1760	10,0-12,2 3,8-6,0 0,3-1,0	with a	ıxilia	ry spring		600 780	1,0-4,5	450	0,4-0,6

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-ic	oad slop	6 Rotational- speed limitat		er delivery aracteristics	Starting Idle	tuet delivery	(5a) IOI6	e stop Control rod
Test oil tem revimin	p 40°C (104°F) cm²/1000 strokes 2	Note changed to revimin 3	revimin	cm /*000 strokes 5	rev/min	<b>አሜ</b> አ <b>ሂሂሂሂሂሂሂ</b> 7 mm RW	rev/min	travel mm 9
(2) 1400	60,0 - 61,0 (58,0 - 63,0)	1450-1460*	500	46,0 - 48,0 (44,0 - 50,0)	100	14,7-15,3		
			63)					

Checking values in brackets

\* 1 mm less control rod travel than col 2

745L (3 - 4)

MB5,7q 1028DL (2)

#### **B.** Governor Settings

1 Upper Degree of deflection of control lever	rated speed	Control rod travel mm	Intermediate Degree of deflection of control lever		Control rod travel mm	4 Lowe Degree of deflection of control lever	rev/min	ed Control rod travel mm	(°)	Control rod travel mm
ca.63	1400	16,0				ca.29	350	7,9		•
	1500 1580	9,8 3,8	withou	it aux	oliary spi	ing	200 350	19 - 21 7,6-8,2		
ca.61	1400 1525	ca. 11,9					500 700	3,1-5,5		
(5)	1650	0,3-1,0	with a	uxili	ary sprin	1	<u> </u>		<u></u> .	

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

0.00		Rotational-	(3a) Fue	el deiivery	Starting	tuel delivery	Sa) idle	gote
	ad stop  p 40°C (104°F)  cm³/1000 strokes	6 Rotational- speed limitat Note changed to rev/min 3		cm <sup>3</sup> /1000 strokes	idle rev/min 6	cm³/ 1000 strokes 7		Control rod travel mm
(3) 1380	74,5 - 75,5 (72,5 - 77,5)	1420-1430*			100	78,0-88,0 75,0-91,0)	350	7,9
(4) 1380	75,5 - 76,5 (73,5 - 78,5)	1420-1430*						

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WPP CO1/4 MB 5,7 q 8

2. Edition

En

PES 6 A 90 D 410 RS 2293

Komb.-Nr. 0 400 876 316

RSV 350-1200 A0B 1101-1 L

Supersed: 7.483
Daimler-Benz
company
engine OM 352
70 kW (95 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2, 3-2,25 (2,10-2,30)

mm (from 80@W = 9,0-12,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travei	Fuer delivery	Spring pre-tensioning (torque control valve)
rev/min	mm 2	cmi/100 strokes	100 strokes	mm 2	cm - 100 strokes	6 mm
1	2	3	0 3(0 45)			
1200	8,4-8,5	4,5-4,6	0,3(0,45)			
350	7,1-7,3	0,8-1,2	0,2(0,4)			
]						

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	r rated speed		interme	diate rated	speed	4	Lower	rated speed	Torque control		
deflection of control	travel mm	Control rod travel mm rev/min				Control- lever deflection in degrees	:ev:m·n	travel mm	revimin	travel mm	
lever	2	3	4	5	6	7	8	9	10	11	
loose	800	0,3-1,7	-	_	-	-	350	7,2	1200	8,4-8,5 9,8-9,9	
	x =	4,0					350	7,1-7,3	800	9,5-9,7	
ca.65	7,4 4,0 1400	1225-1235 1290-1320 -1,7					475-535	= 2,0	1000	8,9-9,2	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(20)	ill-load stop emp 40°C (104°F)	Rotational- speed limitat Note Changed to			Starting fuel delivery 5 4a ldle stop ldle Control ro			
revimin	cm-/1000 strakes	rev/m:n	revimin 4	cm /1000 strokes 5	revimin 6	cm~1000 strokes 7	revimin 8	mm 9
1200	45,0-46,0 (43,0-48,0)	1225 - 1235*	600	45,0-47,0 (43,0-49,0)	100	78,0-88,0 (75,0-91,0 = 14,9 - 15,3 mm RW	) -	-

Checking values in brackets

# 1 mm less control rod travel than col. 2

12.83

BOSCH

Geschaftsbereich Km. Kundendienst. Kfz-Ausrustung.

1980 by Robert Bosch Gmbm. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allerhagne par Robert Bosch Gmbm.

WPP 001/4 MB 5,7 q 3 7. Edition

En

PES 6A 90D 410RS 2293

RSV 350-1300A0B1105DL

Komb.-Nr. 0 400 876 260

supersedes

6.83

compality

Daimler-Benz

OM 352

92 kW(125PS)(1)

All test specifications, are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

(2,10-2,30)Port closing at prestroke

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning - torque control valve)
rev/min	mm 2	cm@rt()() strokes	cm3 100 strokes	n m	cm\$ 100 strakes	unu
1300	9,5-9,6	6,2-6,3	0,3(0,45)			
350	7,4-7,6	1,2-1,6	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Testoil-ISO 4113

	r rated speed		Intermediate rated speed			4		rated speed.	3 Torque control		
Degree of deflection of control	travel enm	Control rod fravet mm rev min	   			Control lever deflection	rev-min	travei mm	fev min	travel mm	
leve*		3	.1	5	6	in degrees 7	ષ્ઠ	Ģ	10	11	
loose	800	0,3 - 1,0	-	-	_	ca.28	350	5,9	1300	9,5- 9,6	
	Х	= 6,0					100 350	min.19,0 7,4-7,6	800	10,2-10,4	
ca.68	8,5 4,0 1550	1340-1350 1430-1460 0,3-1,7					470 <b>-</b> 530 700	= 2,0 max.1,0	500	10,3-10,4	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(2b) F	Speed in		HOGH:	iel delivery mracteristics	Starting I	luel delivery 5	4a ldle stop		
Test oil to	emp. 40. C. (104. F) cm <sup>3</sup> : (000. Strokes 2.	Note changed to interpreted the state of the	rev/mic	cm3 1000 strokes	revimin 6	cm®1000 strokes 7	(02/min 8	Control rod travel mm 9	
1300	62,5 - 63,5 (60,5 - 65,5)	1340-1350*	800 500	60,0-62,0 (58,0-64,0) 54,0-56,0 (52,0-58,0)	100	80,0-90,0 13,7-14,3 mm RW	-	-	

Checking values in brackets

\* firmite is control to ditravel than coll 2

schaftsbereich AH, kun lendlenst. Mr. Ausrustung. 1980 by Robert Bosch Ghöber Postfach 50, 0, 7000 Stuffe (H. 1, Pached in the Federal Republic, of German, or ormejen Aproclude Federale of Alternation par Robert Bosch GmbH.

WPP 001/4 MB 5,7 q 6 3. Edition

En

PES 6 A 90 D 410 RS 2293-1

RSV 350-1400 AOB 745-1L

supersedes 8.82

Komb.-Nr. 0 400 876 312

engine OM 352 A

115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

estoil-ISO 4113

2,15-2,25 (2,10-2,30)

mm (from BDC)

		(2,10-2,30)				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1380	11,9+0,	7,6-7,7	0,3(0,45			
350	7,8-8,0	0,9-1,5	0,2(0,4)			
					<u> </u>	
İ						

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper of deflection of control level	rated speed revimin 2	Control rod travel mm	Intermediate Degree of deflection of control lever		ed  Control rod  travel  mm  6	Degree of deflection of control lever	rated spe revimin 8	ed Control rod travel mm	3 Tar	cue control Control rod travel mm.
100se ca. 61		0,3-1,0 4,25 1420-1430 1530-1560 0,3-1,7	-	•	-	ca. 29	350	7,4 min.19,0 7,8-8,0 10= 2,0	•	-

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	oad stop	6 Rotational- speed limitat	(or) horalional horal			fuel delivery	(5a) idle stop		
Test oil ten rev/min 1	op 40°C (104°F) cm³/1000 strokes 2	Note: changed to rev/min 3	rev/mi:i	cm <sup>3</sup> /1 <b>000</b> strokes 5	rev/min	cm-/1000 strokes 7	rev/min	Control rod travel mm 9	
1380	75,5-76,5 (73,5-78,5)	1420-1430*	600	63,0-66,0 (61,0-68,0)	100	88,0-98,0 (85,0-101,0 = 16,3-16, mm RN	0	_	

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83



WPP 001/4 MB 3,8 g 2

4. Edition

PES 4 A 90 D 41C RS 2294

Komb.-Nr. 0 400 844 047

**Testoil-ISO 4113** 

RQV 300-1425 AB 740 L

supersedes 83 companyDaimler-Benz engine OM 314

62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

1	Port closing at pres	truke	(2.1 - 2.3)	mm (from BDC)			
1		Control rod	Fuel delivery		Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
	rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strok <del>es</del> 3	mm 6
	1400	9,7-9,8	6,3 - 6,4	0,3(0,45)			
j	300	7,5-7,7	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [

#### B. Governor Settings : : ::::::

deflection	rev/min Control rod travel mm	Control rod (tatravel mm (21 rev/min (21	of control	rated spo rev/min 5	Control rod travel	Lower rateri: Degree of deflection of control lever 7	revimin	Control rod travel	Sliding.sl	mm 11.
max.	-	15,2-17, 1455-1469 1550-1580 0 - 1,0	5	-	-	ca.14		min.9,1 7,5-7,7	640	0,7-1,0 3,2-3,6 5,5-5,7 8,1
						370 <b>-</b> 520				

Torque controi travei a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel deliv	ery characteristics 5a peed 5b	Starting lidle switchir		Torque-control 5 travel Control ro		
r <b>ev</b> /min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>2</sup> /1000 strokes	rew/min	<b>አውአ<b>ነሪያር</b>አት/<del>የ</del>አማ</b> አ 7	rev/min	mm 9	
1400	62,5 - 63,5 (60,5 - 65,5)	1455-14 65 *	-	-	100	13,7-14,3 mm RW	-	-	

Checking values in brackets

\*1 mm less control rod travel than col. 2

12.83

WPP 001/4

KHD 1 d

3. Edition

PE 6 A 95 D 410 LS 2450 RQ..929,930,984D,986D,987D 2.78 Supprisedes PE 8 A 95 D 410 LS 2451 RQV..898,931,973,974,975,976,983D, KHD company F 6 L 413 F/ FW 988D,990D,996,999,1006D,1009, PE 10A 95D610/4 LS 2452 1014,1016,1020,1021,1026D PE 12A 95D 610 LS 2453 10 EP/RSV..1002D, 1084 Instructions P. 2 12 All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pirestroke 2,0-2,1

estoil-ISO 4113

mm (from BDC)

Rotational Speed	Control rod travel	Fuel delivery		Control rad travel	Facil desvery	Sure pre tensioning de tipe control vaicer
revimin	mm (2)	cm¥100 strokes 3	cm3 100 strokes 4	min 2	, m <b>\$</b> 1ga strokes 3	nin: ti
1000	9	7,5 - 8,0	0,4			
	6	3,2 - 4,2				
200	6	0,5 - 1,4				
						!

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	Control rod travel	Control rod fravel min rev. min	Interr	nediale ra	ted speed	Control lever detection in degrees	Low resimo	er rated speed Control rod travel mm	3 t.	rque control  Control rod  travel  mm
1	See page 3-8		.4		Ö	7	វ	q	10	11
(2a)										

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(4)	eff load step	Retaironal speed smitat		iel delivery aracteristics	Starting f	uet delivery 5	4a) Idle Stop	
revimin	emp. 40. C. (104. F) cm3.1000 strokes 2	Note changed to 1 reviews 3	rev min	cm <sup>3</sup> 1000 strokes	rev/min	oni# 1000 Strakes 7		Control rod travel mm 9
	See page 9 - 22							

Checking values in brackets

\* 1 mm less cuttry rod travel than cot 2

11.83

Geschallsbereich NH wurdendienst. Ntz Ausrustung. 1980 by Robert Bosch ombie Postfach 50-12 7000 Stuttgart fil Printed in the Fiederal Regional in Edward in Edward and Edward file and Edward Allemagne par Robert Bosch Gmber.

#### INSTRUCTIONS

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#### 2. Carn sequence and angular cam spacing

#### 3. Instructions for testing

#### to Section B:

Torque control dimension a = .. -section C, column 8 as required for trials no. for pre-adjustment. Final dimension to be set according to fuel-delivery characteristics in Section C, column 4-5. Further instructions for trials no. will follow on a separate information sheet.

#### to Section C:

If supplied, the control-rod stop with RQV governors must be set with a torque control of n= 600/min.

hecking	of slider	Fuil-toad	speed red			idie spe			a.t.cations	Torque (	control
	Control rod travel	Setting p	Control rod travel		cifications Control rod travel	Setting t	Control roo travel	revimin	citications Control rod travel mm	rev/miñ	Control rod travel mm
	mm 2	rev.min	ന്നന 4	rev/min 5	6	7	8	9	:0	:1	12
300	1325 AB 92	29L, 93	30L								
550	15,6-16,0	650		1400	15,6-16,0 5,0-12,2 0 - 7,0 0 - 1,5	580	0	1300 4	5,4-8,1 1,4-6,5 1,2-3,5 0		-
n flywei	ontro- travel ght assembly gime 1250 AB 929		-	ൗണ	j Si	peed regul	lation At		<u> </u>		1 mm less contr rod trav
650	15,6-16,0	650	i	1300	10,0-14,8	580	0	200 300 400 480	6,3-8,1 4,2-6,2 0,8-3,2	-	-
n flywe	1250 AB984	DL, 98		1290 1320 1340 1420	13,0-15, 6,0-13, 0 - 10	7	O O	200 350 410 470	6,5-8,1 2,8-5,0 0,6-3,2	1	15,8-16,0 15,3-15,6
	1250 AB986	SDE2 sion a	0,2	mm		Speed reg	ulation	At			t nm essica ragit
650	15,6-16,4	650	16,0	1300 1320 1340 1420	6,4-12, $0-9,$	5	0	200 300 410 560	6,1-8,2 4,0-6,0 0 -2,4 0		
	e-control travel veight assembly di	mension a	0,3	mm	1	Speed re	gulation	At			1 mm less col rod tr

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation At

mm less control rod travel

14	300 14,5-17,6 380 6,8-12,4 350 0 - 7,2 340 0	-	-	-	200 300 500 840	7,3-9,0 4,9-7,1 2,3-4,8		0,3-1,3 3,4-4,2 8,2
							-	-

300-1150 AB 898L

ca.68		-	-	-	ca.12	450	7,3-9,0 2,7-4,1 0,7-1,8 -	0,3-1,3

300-1075 AB 898L

	ca.	68	15,0-18,0 8,0-13,2 0 - 7,2	-	-	-	ca.12	200 300 500 710	7,5-9,0 5,1-7,0 1,1-2,4	700	0,3-1,2 4,0-4,5 8,3
										-	-

300/725-1075 AB 931L

ca.68	1075 1100 1160 1220	15,0-17,3 11,0-15,4 0 - 7,4 0	ca.48	700 800 900 950		140 300 450 700 830	6,8-8,2 4,7-6,1 3,6-4,0 1,7-3,9	400 650	0,7-0,8 1,9-2,1 1,9-2,6 4,6-5,2 8,5
		•						-	-

Upper rated	speed		Intermediat	e rated sp	eed	Lower rated	speed		Sliding si	eeve travel
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	ontrol travel
•	2	3	4	5	6	7	¦8	9	10	11

ca.	50	1180 1250 1300 1380	15,0-18,4 6,8-12,0 0 - 7,6	600 700 840 880	11,8-14,7 7,6-10,3 0 - 2,4		150 250 420 530	600	0,5-1,2 3,2-3,6 7,4-7,6 8,3
						,		650 400	0,7

300-1325 AB 974 L

	ca. 66				-	-	ca. 10	300 450	6,6-8,0 4,6-6,1 2,7-3,8 1,8-3,2	1325	8,3
--	--------	--	--	--	---	---	--------	------------	--	------	-----

300-985/1325 AB 975L

ca. 68	1350 12,0-16,0 1420 4,4-11,0 1460 0 - 8,0 1560 0	.000   5 .100   0 .300   0	3,4-15,3 5,4-8,1 0,5-1,0 0,5-1,0	ca. 12	250 400 600	6,8-8,0 5,6-7,2 3,3-4,8 0,8-2,2	2,0-2,5 8,5 —
		.380	0		710	U	

RQV 300-1325 AB976L

ca - 68	1350 1700	15,2-17,8 0 - 1	-	-	•	ca. 12	300	min. 8 5,4-5,6 1,5-3,7	600	
ca. 59		9,4-10,4 2,7-4,6					500		-	-

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Joper rated s	peed	Control rod	Intermediate Degree of deflection	rated sp	Control rod	Degree daflection	on	Control re		sleeve travel -control travel
effection f control	rev/min	mm	of control	rev/min	mm	of contro		nin mm	rev/min	mm
ever	2	3	4	5	6	7	8	9	10	11
300-12	50 AB9	83DL, 990	DL		Т	orque (	contro	ltravel	a =	0,5 mm
ca.66	1290	15,0-18,		-	-	ca.		0 7,6-8 0 5,2-6		8,3
	1370	7,5-12, 0 - 7.	7				60	0 2,0-3		0
	1530	0		d d			85	0	600	0,5-0,6
300-10	75 ABS	28801				Torq	ue con	trol tra	vel a =	0,5 mm
			<del> </del>	<del>-</del>	T -	ca.		00 6,2-8		
ca. 68	1190	15,0-18, 4,1-10,	4		_		30	00 4,4-6	5,2	
ca. 66	107	5, 15,0-18,	0		E	į		00   1,8-3 20   0		o b,5-0,6
<b>cu.</b> 00		8,0-13, 0 - 8								
RQV 30	00-107	5 AB988CL				Toro	que col	ntrol tra	avel a =	0,5 mm
ca. 68	124	0 15,0-18 0 8,0-13	,2	-	-	ca.	12 20 30	0 5,1-	7,0 700	0,3-1,7
	132 140	0 0 - 7	,2				50 71		108	0 0 0 0,5-0,
Pov. 1	150 10	20001 (V12	274)							
		999L (V13							115	0 5,4
ca.48	1100 1150 1200	8,3-13	,0						-	
RQV 3	00-100	00 AB10060	L (V1312	10)		Tor	que co	ntrol tr	avel a =	0,5 mm
ca. 6	58 110 113 129		2,0	-	-	са	3	1 .		3,8-4,
									100	00 0,5-0,

Opper lated speed			Intermediate	e rated spe		Lower rated s		Control roo		ng sleeve travel	
egree of effection control ever	-	avet	Degree of deflection of control lever	rev/min	travel  mm  6	deflection of control lever	rev/min	travel mm 9	1 -	mm 11	
RQV 30		'50 AB1009	L (V13	157)							
ca.68	750 800 815 850	15,G-18,4 4,2-11,0 0 -8,0 0	ca. 52	525 600 650 700	14,0-20,0 7,9-12,2 3,0-6,2 0		300	7,1-8,2 4,0-6,3 3,6-4,0	400	0,3-1,2 1,9-2,1 3,7-4,5 8,3	
RQV 30	0-800/	1325 AB101	4L								
ca.46	1330 1420 1500 1590	9,2-14,8	ca.30	600 720 840 880	11,9-14, 6,6-9,0 0 -2,3		100 300 400 510	9,4-12,2 4,1-7,9 0 - 3 0	150 700 1020- 1300 1330	0,8-1,4 4,0-4,4 7,4-7,6 7,8	
RQV :	300/800	-1150 AB1	016L (V)	12264)	, 1021	(V1315	5)			1	
ca.6			8	760 850 950 1030		8	2 200 450 650 900	3,6-4,0 3,3-4,0	400-	0,5-1, 1,9-2, 8,2	
RQV	300/6	50-900 AB1	.020L (V	12263)							
ca.6	6 910 980 1020	0 - 7	4 ca.4	8 61 70 79 81	0 0 -2,	3	2 200 400 600 720	3,6-4, 1,8-4,	6   450-	0,3-1, 1,9-2, 8,3	
									•	_	
RQ	300-1	250 AB102	6DL	<del>l</del> -	Torque	contro	trav	ela=	0,5 m	nm	
ca.	58 130 138 145 154	0 - 7	,4	-	-	ca.	12 200 300 500 840	4,9-7, 2,3-4,	1 800	3,8-4	

En

oper rated spi egree of	i	Control rod	Intermediate	rated sp	Control rod	Lower rated Degree of deflection	speed	Control rod	Sliding slee	eve travel introl travel
control	i	nm	deflection of control lever	rev/min		of control	ien/win	ram	rev/min	mm
ver  r	1	3	4	5	6	7	8	9	10	11
300-132	5 A8 B	1084L								
ca.69	1325 1400	16,0				ca.23	l	6,0	1300	0
	1450	7,7 1,0	witho	ut au	xpliary s	pring	300	19,0-21,0		1,2-1,8
		10,4-12,3	Ĭ				450	0,3-2,9		
	).430 1550	2,8-6,0 0,3-1,0	with	auxil	iary spri	ng				
300-10	000 A7	B1002DL					1			
ca.72	1000		T	T		ca.23	300	6,0	980	0
	1030				ciliary sp		100	19 - 21	400	0,8-1,
	1050	7,0-10,2	with a	ı uxili	iary sprin	g	300 400			
	1100	2,0-4,4					550			
	1200	0,3-1,0					·			
300-1	325 A8	B 1002DL								
ca.69	1325					ca.2	5 300	6,0	- 1300	0
	1380	10,2 5,4 0 ca.10,5			xiliary s	- 1	150		. 1	
	1330	ca.10,5	with	auxi1	iary sprii	ng	300 500	1,7-3,8	450	0,8-1,
	152	0 0,3-1,0			•		700	0 - 1		
										T
	T	<del></del>								
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# Testoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

	delivery emp 40°C (104 F)		Rotational limitation Control ro- stop	RQV		Fuel dei	ivery characteristics	Starting	fuel delivery	
rev/min	cm /1000 strokes		rev/min			rev/min	cm / 1000 strokes	rev/min	cm1/1000 strokes	
1	2		3			4	5	6	7	
F6L.	413 F - 141	kW/19	2PS / 2	650/min						
1325	91,5-93,5	RQ:	600	1000	88,	,5-91,5	5	100	119-129	
		RQV:	1340	800	87,	5-90,5	5			
_										
F8L	413 F - 188	kW/19	2PS / 2	650/min			term ti sant annonggionni yamangionni kan mana sant ki ma kagasar naga			
1324	91,5-93,5	RQ:	600	1000	88	,5-91,5	5	100	119-129	
		RQV:	1340	800	87,	,5-90,5	;			
F 10 L	413 F - 23	6kW/3	20PS /	2650/min						
1325	91,5-93,5	RQ:	600	1000	88	,5-91,5	5	100	119-129	
		RQV:	1340	800	87	,5-90,5	5			
F 12 L	413 F - 28	4kW/3	84 PS /	2650/min						
1325	91,5-93,5	RQ:	600	1000	88	,5-91,5	5	100	119-129	
		RQV:	1340	800	87	,5-90,5	5			

Caution: These changed values apply to governors without torque control

# Festoil-ISO 4113

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-foud delivery Test oil temp 40°C (104 F)	Rotational-speed limitation RQV Control-rod	Fuel delivery characteristics	Starting fuel delivery
rev/miri cm*/1000 strokes	rev/m a	rev/min cm // 1000 strokes 4 5	rev/min cm <sup>-/</sup> 1000 strokes 6 7
92 PS / 2650 min	- RQ 300/1325 AB 929 I	-	
325 91,5-93,5	600 400	) max. 84,5	100 119-129
92 PS / 2500 min	- RQ 300/1250 AB 987 I	DL	a = 0,2 mm
250 91,5-93,5	600 700 400		100 119-129
86 PS / 2500 min	- RQ 300/1250 AB 929 I	•	
250 94,5-96,5	600 400	) max. 84,5	100 119-129
76 PS / 2500 min	- RQ 300/1250 ABV 129	16 D	a = 0,3 nm
250 85,5-87,5	500 1000 700		100 119-129
68 PS / 2500 min	- RQ 300/1250 ABV 129	46 D	a = 0,3  mm
250 75,5-77,5	600 1000 700	,	100 119-129
76 PS / 2300 min	- RQ 300/1150 ABV 122	12 D	a = 0,35 mm
150 83,5-85,5	600 1009 700		100 119-129
60 PS / 2150 min	- RQ 300/1075 ABV 1224	13 D	a = 0,35 mm
075 82,5-84,5	600 100 70	00 80,5~83,5 00 83,5-86,5	100 119-129

#### C. Settings for Fuel Injection Pump with Fitted Governor

rev/min   cm <sup>2</sup> /1000 strokes		Rotational speed limitation	Fuel delivery characteristics		Starting Idle switchir	fuel delivery ng point 	Intermediate rotational speed Torque control travel	
		rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev inin	cm <sup>3</sup> /1000 strokes	sevimin m	mm
1	2	3	4	5	6	7	8	
1.3	25 91,5-93,5	1365-1375*4	400 ı	max.84,5	100	119-129		
			_					
	1kW/192 PS/25	00/min - 1	RQV 30	0-1250 AB 133	92D,		ABV13776 a = 0,5r 770=4,5	

3.	137kW/186 PS/2500	/min - RQV	300-1250	ABV12248		
	1250 90,5-92,5	1290-1300*400	max.84	,5 100	119-129	

4.	130kW	/176 PS/2500	/min -	RQV :	300-1250	AB983DL	(V13122D)	a = 0.5  mm
	1250	85,5-87,5	1290-13001		83,5-86 78,5-87	•	119-1	29

5. 107k	1/145 PS/2400	<u>/min</u> - RQV 3	00-1200 ABV	12259D		a =
1250	71,5-73,5	1240-1250*1000 700	68,0-71,0 67,0-70,0	100	119-129	

6.	124kW	/168PS /	2300/min	-	RQV	300/800-1150	AB1021L	(V12155)
	1150	84,5-86,	5 1190-	1200	*		100	119-129

7. 124kW,	/168 PS/2300	/min	-	RQV	300-1150	AB999L	(V13274)
1150	85,5-87,5	1190-	1200	k		100 1196	119-129 17- 20

8. 1	01kW/	137 PS /	1800/min -	RQV	300-900	ABV13156		
	900	79,5-81,5	940-950*	400	max.82,5	5 100	119-129	

9. 101kl	1/137 PS/1800	/min	-	RQV	900 ABV 13273		
900	80,5-82,5	910		936	17 - 20	100	119-129

10. 90kW	/116 PS / 15	00/min -	RQV I	300/525-750 A 750 ABV!2507	AB1009L	(V13157)	
750	78,5-80,5	790-800*	400	max.76,5	100	119-129	٠,

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery	Rotational speed limitation	Fuel deli	very characteristics	lale switchi	fuel delivery  ng point     cm <sup>3</sup> ; 1000 strokes	tritermed rotationa Torque travel	it speed
1	2	3	4	5	6_	7	В	, min
1. 141	kW/192 PS / 2	2650/min ·	- EP/RS	V 300-1325 A	8 B 1	n84 I		

1. <u>141 kW/192 PS / 2650/min</u> - EP/RSV 300-1325 A 8 B 1084 L 1325 91,5-93,5 1365-1375\* 400 max. 82,5 100 119-129

2. 141kW/192PS / 2650/min - EP/RSV 300-1325 A 8 B 1002 DL 1325 91,5-93,5 1365-1375\* 400 max. 82,5 100 119-129

4.

5.

#### F 6 L 413 FW

 $6.1.121 \, kW/165 \, PS / 2500/min$  - RQV 300-1250 ABV 13925D a = 0,5 mm  $2.108 \, kW/147 \, PS / 2500/min$ 

 1. 1250
 79,5-81,5 1290-1300\*
 800 78,0-81,0
 100 119-129

 2. 1250
 74,5-76,5 1290-1300\*
 800 71,0-74,0
 100 119-129

7.1.115kW/156PS / 2300/min - RQV 300-1150 ABV 13926 D a = 0,5 nm 2. 96kW/131PS / 2300/min 1. 1150 78,5-80,5 1190-1200\* 800 78,0-81,0 100 119-129

2. 1150 68,5-70,5 1190-1200\* 800 68,0-71,0 100 119-129

2. 1075 67,5-69,5 1115-1125\* 800 68,0-71,0

8.1.101kW/137PS / 2150/min - RQV 300-1075 ABV 13927 D a = 0,5 min 2. 91kW/124PS / 2150/min 1. 1075 73,5-75,5 1115-1125\* 800 74,0-77,0 100 119-129

9.

10.

\* 1 mr

100

119-129

\* 1 mm less control rod travel than col. 2

-i3-

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full to Contri	e power pad delivery of-rod stop of-temp 40°C (104°F)	Rotational speed limitation		Fuel	deliverv	characteristics	Starting fuel delivery Idle switching point			Intermediate rotational speed Torque-control travel	
ev/m	in cm <sup>2/</sup> 1000 strokes	rev/min	ı	rev/it	nin cm	3/1000 strokes	rev/m	in .	cm <sup>3</sup> /1000 strakes		mm
1	2	3		4	5		6		7	В	
1.	188kW/256PS / 2	650/min	-	RQ	300/	1325 AB 929	L	(V	11708)		
	1325 91,5-93,5	600			400	max. 84,5	1	00	119-129		
2.	188kW/256PS / 2	500/min	-	RQ	300/	1250 AB 987	DL	( V	13391 D)	a = (	),2 mm
	1250 91,5-93,5	600			700 400	90,5-93,5 82,5-88,5		00	119-129		
3.	183kW/248PS / 2	500/min	-	RQ	300/	1250 AB 929	L (	V	12241)		<del></del>
	1250 91,5~93,5	600			400	max. 84,5	1	00	119-129		
4.	173kW/235PS / 2	500/min	-	RQ	300/	1250 ABV 12	946	D		a = (	),3 mm
	1250 85,5-87,5	600			700 400	83,5-86,5 max. 84,5		100	119-129		
5.	173kW/235PS / 2	300/min	-	RQ	300/	1150 ABV 12	242	D		a = (	),35 mm
	1150 87,5~89,5	600			1000 700 400			00	119-129		
6.	157kW/213PS / 2	150/min	-	RQ	300/	1075 ABV 12	243	D	taka estimologiaan kananalaan kananalaan kananalaan kananalaan kananalaan kananalaan kananalaan kananalaan kan	a = (	),3 mm
	1075 82,5-84,5	600			1000 700 400			00	119-129		
7.											
3.	eri riinnaaga <u>aaa</u> arphinimiiin ka <u>akaraga</u> ayn aaroliinn ka										
9.											

10.

\* 1 mm less control rod travel than coi. 2

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full Ic	ie power pad delivery of rod stop oil temp 40°C (104 f)	Rotational speed limitation	Fuerd	elivery characteristics	idle switchir	tuel delivery	Intermediate rolational speed Torque-control travel
rev/m	nn cm <sup>8</sup> /1000 strokes	rev/min	rev!mi	n crn <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min mm 8
1.	188kW/256PS / 26		<del> </del>	300-1325 AB 97	4 L (	12247), 976 l (13605), 1362	
	1325 91,5-93,5	1365-1375*	400	max. 84,5	100	119-129	770=4,5mmRW
2.	188kW/256PS / 25		RQV	300-1250 AB 99 300-800/1250 A			14020 D a = 0,5 mm
	1250 91,5-93,5			91,0-94,0 91,5-94,5	100	119-129	
3.	183kW/248PS / 25	500/min -	RQV	300-1250 AB 97	4 L	(V 12248)	*
	1250 90,5-92,5	1290-1300*	400	max. 84,5	100	119-129	
4.	173kW/235PS / 25		RQV 1000 700		3 DL ( 100	(V 13122 D) 119-129	a = 0,5 mm
5.	173kW/235PS / 23	300/min -	RQV	300-1150 ABV 1	3777 1	)	a = 0,5 mm
	1150 84,5-86,5	1190-1200*		32,5-85,5 86,5-89,5	100	119-129	
6.	165kW/224PS / 23	300/min -	RQV	300/800-1150 A	B 102	1 L (13155)	met - Vananske meta antiker sterreter blivåre me e angemåtengdate afterflette er
	1150 84,5-86,5	1190-1200*	400	max. 84,5	100	119-129	
7.	165kW/225PS / 23	300/min -	RQV	1150 AB 999 L	(V 1	3274)	
	1150 85,5-87,5	1160			100 1196	119-129 17- 20	
8.	165kW/225PS / 22	200/min -	RQV	300-800/1100 A	B 973	DL (V 132	30 D)a = 0,7mm
	1100 85,5-87,5	1140~1150*	1000 700		100	119-129	
9.	132kW/180PS / 2	1500/min -	RQB	300-1075 ABV 1	3944	D	a = 1,2
	1075 71,5-73,5	1115-1125*		70,0-73,0 23,0-86,0	100	119-129	
10.	134kW/182PS / 18	800/min -	RQV	300/650-900 AE	V 131	56	خدهاد <u>ن و پرون باکست</u> ون که
	900 79,5-81,5	910	400 n	nax. 83,5	100	119-129	

\* 1 imm less control rod travel than col. 2

# Testoil-ISO 4113

(	C. Settings for F	uel Injection	Pump with Fitte	ed Governor	
	engine power Full load delivery Control-rod stop Test oil temp 40°C (104°F)	Rotational speed limitation	Fuel delivery characteristics	Starting fuel delivery lidle switching point	intermediate rotalional speed Torque-control travel

Full loa	ad delivery il-rod stop il-temp 40°C (104°F)	Rotational speed limitation	Fuel deliv	very characteristics	Starting Idle switchir	tuel delivery	Intermed rotationa Torque- travel	speed
rev/min cm <sup>2</sup> /1000 strokes		rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> , 1000 strokes	rev/min   mm	
1	2	3	4	5	6	7	8	ļ
11.	11. <u>134kW/182PS / 1800/min</u>		- RQV 9	00 ABV 13273	•	i	•	•
	900 80,5-82,5	910			100	119-129		
					936	17- 20		
12.	114kW/155PS / 1	500/min	- RQV 3	00/525-750 AB	1009	L (V 13157	)	
	750 78,5-80,5	760	400	max. 82,5	100	119-129		

13. <u>114kW/155PS / 1500/min</u>	- RQV 750 ABV 12507		
750 78,5-80,5 760		100	119-129

#### F 8 L 413 FW

16.	1.	162kW	/220 PS / 2	500/min - R	QV 30	0-1250 ABV 13925 I	)	a = 0,5 nm
	2.	144kW	/196 PS / 2	500/min				
	1.	1250	79,5-81,5	1290-1300*	800	78,0-81,0 100	119-129	
	2.	1250	74,5-76,5	1290-1300*	800	71,0-74,0 100	119-129	
17.	1.	153kW	/208 PS /23	00/min - RQV	300-	1150 ABV 13926 D		a = 0,5 mm
	2.	129kW	/175 PS /23	00/min				
	1.	1150	78,5-80,5	1190-1200*	800	78,0-81,0 100	119-129	
	2.	1150	68,5-70,5	1190-1200*	800	68,0-71,0 100	119-129	
18.			/184 PS /21 /164 PS /21		300-	1075 ABV 13927 D		a = 0,5 nm
				1115-1125* 1115-1125*	800 800	74,0-77,0 100 68,0-71,0 100	119-129 119-129	

# Testoil-ISO 4113

Full Con	ine powe load deli- trol rod s oil temp	ery	Rotational speed smitation	Fuel delivery characteristics			Starting fuel delivery litle switching point				rotalional speed Torque control travel	
rev/i	min c	m <sup>8</sup> )1000 strokes	rev/min		ev/min	cm <sup>3</sup> /1000 strokes		rev/min cm <sup>3</sup> . 10		000 strokes	rev/min	mm
 1.	<del>+-</del>	1/256PS / 26!	<del> </del> 50/min	-	EP/RS	SV 300-1325 A	-	В	1084	L		<del>                                     </del>
	1325		1365-1375*		400	max.84,5		100	)	119-129		
2.	188kV	1/256PS / 250	00/min	-	EP/RS	SV 300-1325 A	8	В	1002	DL		
	1325	91,5-93,5	1365-1375*		400	max.84,5		100	)	119-129		
3.	147kl	V/200PS / 190	Ou/min	-	EP/RS	SV 300-1000 A					<del></del>	
	950	79,5-81,5	990~1000*		700 400	80,5-83,5 max. 84,5	. /	100	1002	119-129		
4.					o de designativa de la companya de l					anningstredment di Siliafa kita-appropriate spera adjir e	······································	
5.			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						<del></del>			
6.												

7.

8.

9.

10.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### C. Settings for Fuel Injection Pump with Fitted Governor

engine por ultiload de Control roo Lest oil tem	Blivery	Rotational speed limitation		Fuel delivery characteristics			Starting idle switchir	tuel delivery	Intermed rotational Torque-c travel	speed
ev/min	cm <sup>2</sup> /1000 strokes	rev/min	10	ev/min	cm <sup>3</sup> /1000	strokes	rev/min	cm <sup>3</sup> /1000 strokes		mm
<u> </u>	2	3	4		5		6	7	8	
1. 236	kW/320PS / 26	50/min •	- R	Q 300	/1325	(V1170	09)			
1325	91,5-93,5	600	4	00	max.	84,5	100	119-129		
2. 23	36kW/32OPS / 2	500/min ·	- R	Q 300	/1250	AB984DI	L		a = 0	,2 mm
1250	91,5-93,5	600	100 70		91,0- 91,5-	-94,0 -94,5	100	119-129		
3. 22	28kW/310PS / 2	500/min ·	- R	Q 300	/1250	ABV122	44			
1250	89,5-91,5	600	4	00	max.	84,5	100	119-129 .		
4. 21	7kW/295PS / 2	500/min	- R	Q 300	/1250	AB986D	L (V1	2159D)	a = 0	,3 mm
1250	86,5-88,5	600	100 70			-87,5 -90,5	100	119-129		
	6kW/293PS / 2	300/min	- R	Q 300	)/1150	ABV122	45D		a = 0	,35 mm
1150	84,5-86,5	600	100 70			-85,5 -89,5	100	119-129		
G. 19	)7kW/267PS / 2	150/min	- R	Q 300	)/1075	ABV122	46D		a = 0	,35 mm
1075	83,5-85,5	600	100 70			-84,5 -87,5	100	119-129		
7.									Military an anner viv alore	
8.					a till de til		an an an an an an an an an an an an an a			
9.										

Checking values in brackets

\* 1 mm less control rod trave: than col. 2

engine powi Full load deli Control rod t Test oil temp	very	Rotational speed limitation	Fuel deli	very characteristics	idle	fuel delivery	Intermed rotational Torque-c travel	speed
rev/min c	m <sup>3</sup> /1000 strokes	rev/miii	*ev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1. 236	kW/320PS / 26	50/min -		00-1325 AB898 00-800/1325 A	L (V	12249) 71	<del> </del>	<del> </del> -
1325	91,5-93,5	1365-1375	400	max. 84,5	100	119-129		
Z. 2281	kW/310PS / 25	550/min -	RQV 3	00-1275 ABV13	664D		a = 0	,5 mm
1275	90,5-92,5	1315-1325*	1000 700	90,5-92,5 91,0-94,0	100	119-129		
3. 230	5kW/320PS / 2	2550/min -	RQV 3	00-1250 AB102	6DL		a = 0	,5 mm
1250	91,5-93,5	1290-1300*	1000 700	91,0-94,0 90,0-93,0	100	119-129		
4. 228	3kW/310PS / 2	?500/min -	RQV 3	00-1250 AB898	L	(V11962)		
1250	90,5-92,5	1290-1300*	400	max. 84,5	100	119-129		
5. 21	7kW/295FS / 2	?500/min -	RQV 3	00-1250 ABV13	118D		a = 0	,5 mm
1250	86,5-88,5	1290-1300*	1000 700	84,5-87,5 87,5-90,5	100	119-129		
6. 19:	3kW/262PS / 2	?500/min -	RQV 3	00/850-1250 A	BV122	94		
1250	79,5-81,5	1290-1300*	400	max. 82,5	100	119-129		
7. 216	5kW/293PS / 2	300/min ~	RQV 3	00-1150 AB988	DL	(V13119D)	a = 0	,5 mm
1150	84,5-86,5	1190-1200*	700 400	83,0-86,0 75,0-79,0	100	119-129		
8. 216	5kW/293PS / 2	300/min -	RQV 3	00/800-1150 A	31016	L (V12264)		
1150	84,5-86,5	1190-1200*	400	max. 82,5	100	119-129		
9. 206	5kW/280PS / 2	300/min -	RQV 3	00-1150 AB898				<del></del>
115:)	79,5-81,5	1190-1200*	400	max. 82,5	100	119-129		
10. 197	7kW/267PS / 2	150/min -	RQV 3	00-1075 AB988D	L (V1	3120D)	a = 0.	,5 mn.
1075	83,5-85,5	1115-1125*	1000 700 400	81,5-84,5 84,5-87,5 max. 82,5	100	119~129		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### C. Settings for Fuel Injection Pump with Fitted Governor

Control	oower delivery od stop emp 40° (	(104 F)	Rotational speed limitation	Fuel deliv	ery characteristics	ldle "	tuel delivery ng point l	Intermed rotationa Torque:	rspeed
ev/min		000 strokes	rev/min	ļ	cm <sup>3</sup> /1000 strokes	1	cm³/1000 strokes	t6A\win	mm
1.1	10766	/26705 / 3	150 /mic	POV 21	00/750 1075	16 AD 0211	(V12575)	8	<del> </del>
			150/min -	-			•		
	1075	03,5 <del>-</del> 85,	5 1115-1125*	400	IIIdX. 82,5	100	119-129		
12.	184kW/	/250PS / 2	000/min -	RQV 30	00-1000 AB100	06DL	(V13121D)	a =	0,5 mm
	1000	80,5-82,	5 1040-1050*	700	83,5-86,5	100	119-129		
13.	184kW/	/25 <b>0</b> PS / 2	<u>000/min</u> -	RQV 3	00-1000 ABV1:	3550			
	1000	80,5-82,	5 1040-1050*	400	max. 82,5	100	119-129		
14.	168kW/	/228PS / 1	E00/min -	RQV 3	00/650-900 AI	B1020L	(V12263)		
	900	80,5-82,	5 940-950*	400	max. 82,5	100	119-129		
15.	142kW/	/193PS / 1	500/min -	RQV 30	00/525-750 A	 8998L	(V12262)		
15.	142kW/ 750		500/min - 5 790-800*				,		Thirtimina ann a' an deire agus an am
	750						,		halimana a dee qua a vel
16.	750 F <u>10</u> L	78,5-80, 413 FW 		400	max. 82,5	100	,	a =	0,5 mm
16.	750 F <u>10</u> L 1.202k 2.180k	78,5-80, 413 FW W/275PS /	5 790-800* 2500/min -	400 RQV 30	max. 82,5 00-1250 ABV1:	100 3928D	119-129	a =	0,5 mm
16.	750 F <u>10</u> L 1.202k 2.180k	78,5-80, 413 FW W/275PS / W/245PS / 79,5-81,	5 790-800*  2500/min - 2500/min	400 RQV 30	max. 82,5 00-1250 ABV1: 78,0-81,0	100 3928D	119-129	a =	0,5 mm
16. 1. 2.	750 F 10L 1.202k 2.180k 1250 1250	78,5-80, 413 FW W/275PS / W/245PS / 79,5-81, 74,5-76,	5 790-800*  2500/min - 2500/min  5 1290-1300*  5 1290-1300*	800 800	max. 82,5 00-1250 ABV1: 78,0-81,0 71,0-74,0	100 3928D 100	119-129 119-129 119-129	a = 0	
16. 1. 2.	750 F 10L 1.202k 2.180k 1250 1250	78,5-80, 413 FW W/275PS / W/245PS / 79,5-81, 74,5-76, W/261PS / W/219PS /	5 790-800*  2500/min - 2500/min  5 1290-1300*  5 1290-1300*	800 800 RQV 30	max. 82,5 00-1250 ABV1; 78,0-81,0 71,0-74,0 00-1150 ABV1;	100 3928D 100 100	119-129 119-129 119-129		
16. 1. 2. 17.1 2	750 F 10L 1.202k 2.180k 1250 1250 .192khc1kk	78,5-80, 413 FW 413 FW (W/275PS / (W/245PS / 79,5-81, 74,5-76, (/261PS / (/219PS / 78,5-80,	5 790-800*  2500/min - 2500/min  5 1290-1300*  5 1290-1300*  2300/min - 2300/min	RQV 30 800 RQV 30 800	max. 82,5 00-1250 ABV1; 78,0-81,0 71,0-74,0 00-1150 ABV1;	100 3928D 100 100 3929D	119-129 119-129 119-129		
16. 2. 17.1 2. 1. 2.	750 F 10L 1.202k 2.180k 1250 1250 192kk 1150 1150	78,5-80, 413 FW 413 FW (W/275PS / (W/245PS / 79,5-81, 74,5-76, (/261PS / (/219PS / 78,5-80, 68,5-70,	5 790-800*  2500/min - 2500/min  5 1290-1300*  5 1290-1300*  2300/min - 2300/min  5 1190-1200*  5 1190-1200*	RQV 30 800 800 800 800	max. 82,5 00-1250 ABV1; 78,0-81,0 71,0-74,0 00-1150 ABV1; 78,0-81,0 68,0-71,0	100 3928D 100 100 3929D 100	119-129 119-129 119-129		,5 mm
16. 1. 2. 17.1 2. 1. 2.	750 F 10L 1.202k 2.180k 1250 1250 1250 1150 1150 168kk 161kk	78,5-80, 413 FW 413 FW (W/275PS / (W/245PS / 79,5-81, 74,5-76, (/261PS / (/219PS / 68,5-70, (/228PS / (/219PS/ 2	5 790-800*  2500/min - 2500/min  5 1290-1300*  5 1290-1300*  2300/min - 2300/min  5 1190-1200*  5 1190-1200*	RQV 30 800 RQV 30 800 RQV 30	max. 82,5 00-1250 ABV1; 78,0-81,0 71,0-74,0 00-1150 ABV1; 78,0-81,0 68,0-71,0	100 3928D 100 100 3929D 100 100	119-129 119-129 119-129	a = 0	,5 mm

Checking values in bracket

\* 1 mm less control rod trave: than col. 2

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full to Contro	e power ad delivery of rod stop intemp 40°C (104 F)	Rotational speed limitation	Fuel	delivery characteristics	Starting fuel delividle switching point	·	Intermed rolationa Torque- travel	speed
re+/mi	in cm <sup>2</sup> /1000 strokes	rev/min	tëvit	nin cm <sup>3</sup> /1000 strokes	rev/min cm <sup>3</sup> , 100	00 strokes	rev/min	mm
1	2	3	4	5	6 7		8	
1.	283kW/384PS / 20	650/min	- RQ	300/1325 AB930L	. (V11709)			,
	1325 91,5-93	,5 600	400	max. 84,5	100	119-12	9	
2.	283kW/384PS / 3		- RQ	300/1250 AB984D	DL (V13407	))	a = 0	,2 mm
	1250 91,5-93	,5 600	700	91,0-94,0 91,5-94,5 82,5-88,5	100	119-129	9	
3.	274kW/372PS / 2	2500/min	-	RQ 300/1250 AB9	30L (V1224	4)		
	1250 89,5-91	,5 600	400	max. 84,5	100	119-129	€	
4.	260kW/353PS / 2	2500/min	-	RQ 300/1250 AB9	86DL (V1315	9D)	a = 0	.3 mm
	1250 86,5-88	5 600	700	84,5-87,5 87,5-90,5 max. 82,5	100	119-129		,
5.	259kW/352PS / 2	2300/min	-	RQ 300/1150 ABV	12245D		a = 0	,35 mm
	1150 84,5-86,	5 600	700	82,5-85,5 86,5-89,5 max. 82,5	100	119-129	)	
6.	236kW/320PS / 2	150/min	- RQ	300/1075 ABV122	46D		a = 0	,35 nm
	1075 83,5-85,	5 600	700	81,5-84,5 84,5-87,5 max. 82,5	100	119-129		,

C. Settings	for Fuel	Injection Pur	np with	Fitted Governor	r
0. 0090		mjoonon a	p	I ILLOW CONCINION	,

Full Ina Contro	e power ad delivery il rod stop i lemp 40°0	C(104 F)	Rotational speed limitation	Fuel delivery	r characteristics	Starting fuel di lidle switching poi		Interme, rotalion Torque travel	Leeds in
rev/mir	n cm <sup>25</sup> 16	000 strokes	rev/min	1	1000 strokes	rev/min cm <sup>3</sup> /	1000 strokes	tev/min	mm
1	283kW/	384PS / 2	3 650/min ~	POV 300	-1325 AB898L	(V122	10)	8	
	1325	91,5-93,		•	max. 84,5	-	119 <b>-</b> 129	9	
2.	283kW/	384PS / 2	500/min -	RQV 300-	-1250 AB1026	5DL (V134	08D)	a = (	),5 nm
	1250	91,5-93,	5 1290-1300	* 1000 700	91,0-94.0 91,5-94,5		119-129	9	
3.	274kW/	372PS / 2	500/min -	RQV 300-	-1250 AB898L	•			
	1250	89,5-91,	5 1290-1300	* 400	max.84,5	100	119-129	9	
4.	260kW/	353PS / 2	500/min -	RQV 300-	-1250 ABV 13	3118D		a = 0	),5 mm
	1250	86,5-88,	5 1290-1300°	* 1000 700 400	84,5-87,5 87,5-90,5 max. 82,5		119-129	9	
		335PS / 2 200PS / 2		RQV 300-	-1250 ABV 13	3287D		a = 0	,55 mm
	1250	82,5-84,	5 1296-1300				erquantity	,	
	1250	50,5-52,	5	700 1000 700	84,0-87,0 50,0-53,1 39,0-42,0	100	119-129	9	
6.	243kW/	330PS / 2	500/min -	RQV 300-	-1250 ABV 13	3621D		a = 0	,5 mm
	1250	78,5-80,	5 1290-1300*	1000 700	77,0-80,0 73,0-76,0		119-129	)	
7.	259kW/	352PS / 2	300/min -	RQV 300-	·1150 AB898L	, 1016L	(V12264)		
	1150	84,5-86,	5 1190-1200*	400	max. 82,5	100	119-129	)	
8. 2	?59kW/3	52PS / 23	00/min -	RQV 300-	1150 AB988D	L (V121		a = 0	.5 mm
			5 1190-1200*	1000 700	82,5-85,5	100	119-129		
9.	247kW/.	336PS / 2	300/min -	RQV 300-	1150 AB962L				
	1150	83,5-85,	5 1199-1200*	400	max. 82,5	100	119-129	)	
			150/min -					<del> </del>	
	1075	83,5-85,	5 1190-1200*	400	max. 82,5	100	119-129		

Checking values in brackets

\* 1 mm less control rod trave; than col. 2

-22-

\* 1 mm less control rod travel than col. 2

#### C. Settings for Fuel Injection Pump with Fitted Governor

-ull loa Contro	t power id delivery I rod stop I temp 40'0	C (104 F)	Rotational speed limitation	Fuel deliv	ery characteristics	Starting Idle switchir	toel delivery		Intermed rotationa Torque- travel	speed
rev/mit	cm31	000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> , 1000 st	rokes	travei tev/min	mm
1	2		3	4	5	6	7		8	<del> </del>
11.	236kW/	320PS / 2	150/min -	RQV 30	00-1075 AB988[	•	12120D)		a = 0	,5mm
	1075	83,5-85,	5 1115-1125*	100 70 41	00 84,5-87,5	5 1 5	00	119-1	29	
12.	199kW/	270PS / 2	150/min -	RQV 30	00-1075 ABV139	945D	-	· · · · · ·	a = 1	, 2am
•	1075	71,5-73,	5 1115-1125*	105 80			00	119-1	29	
13.	221kW/	300PS / 2	000/min -	RQV 30	00-1000 AB1006 ABV131		12121D)		a = 0	,5 mm
	1000	80,5-82,	5 1049-1050*	700			00	119-1	29	
14.	200kW/	272PS / 2	000/min -	RQV 30	0-1000 ABV 13	 3550				
	1000	80,5-82,	5 1040-1050*			1	00	119-1	29	
15.	202kW/	275PS / 1	800/min -	RQV 30	0-900 ABV1354	19				
	900	80,5-82,	5 940-950*	30	0/650-900 ABV		3 00	119-1	29	
16.	171kW/	232PS / 1	500/min -	RQV 30	0-750 AB998L	(V	12262)			
	750	80,5-82,	5 790-800*	40	0 max. 82,5	1	00	119-1	29	
	F12 L	414 FW								
		/330PS / 3 /294PS / 3		RQV 30	0-1250 ABV139	28 D			a = 0	,5 mm
	1250	79,5-81,		800	78,0-81,0	1 (	00	119-1	29	
2.	1250	74,5-76,5	5 1290-1300*	800	71,0-74,0			·		
18. <u>1</u>	-230kW -193kW	/313PS / 2 /262PS/ 23	2300/min - 1	RQV 30	0-1150 ABV139	29D		a	= 0,5	וחוח
1.	1150	78,5-80,5	1190-1200*	800	78,0-81,0	10	00	119-1	29	
2.	1150	68,5-70,5	5 1190-1200*	800	68,0-71,0					
		/274PS / 2		QV 300	-1075 ABV1393	0D		a	= 0,5	mm
		/248PS / 2	2150/min			-		u	- 0,0	, 114111
	1075		1115-1125*	800	74,0-77,0	10	00	119-12	29	
۷.	1075	0/,5-69,5	1115-1125*	800	68,0-71,0					

En

1324

Checking values in brackets

restoil-ISO 4113

and Governors

WPF 001/4 MAN 16,0 g 1. Edition

RQ 250/1250 AB 1170-2 R PE 10 A 90 D 320 LS 2362 Komb.-Nr. 0 400 649 228  supersedescompany MAN D 2538 M/MF 188 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve) mm	
mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3		
11,5+0,	1: 10,3-10,4	0,3(0,45				
7,4-7,	0,9-1,5	0,25(0,4	)			
	!	6				
	mm 2 11,5+0,	mm   cm <sup>3</sup> /100 strokes   2   3   11,5+0,1   10,3-10,4	travel cm <sup>3</sup> /100 strokes cm <sup>3</sup> / 100 strokes 2 3 cm <sup>3</sup> / 100 strokes 4 11,5+0,1 10,3-10,4 0,3(0,45) 7,4-7,6 0,9-1,5 0,25(0,4)	travel   cm³/100 strokes   cm³/ 100 strokes   mm   2   11,5+0,1   10,3-10,4   0,3(0,45   7,4-7,6   0,9-1,5   0,25(0,4)	mm   cm³/100 strokes   mm   cm³/100 strokes	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

PRG che	g of slider ck Control rod travel	Full-load Setting p		gulation Test spec Control rod travel	efications	4		Control rod travel	Test spe	cifications 5 Control rod travel	Torque	Control rod
rev/min		rev/min	mm 4	mm 5	rev/min		rev/min	8	rev.'mın	10	11	12
600	15,6-16,4	600	16,0		1295- 1365-			6,0	250	min.7,5 5,9-6,1 400=2,0 max.1,0	600 870	11,5-11,6 12,1-12,2 11,9-12,1 11,5-11,8
			!					-		·		
	L		0.6					1	295-1	310 min '		1 mm less control

Torque-control travel

Speed regulation At

rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

1250 10	<sup>3</sup> /-1000 strokes	rev/min 3	rev/min	(2,11)	rev/min	Control red travel cm <sup>3</sup> /1000 strokes / mm
	00 5 400 5			13	6	7
	02,5-103,5 00,5-105,5)	-	500	95,5-98,5 (93,5-100,5) 90,0-94,0 (88,0-96,0)	250	133,0-143,0 (130,0-146,0) =18,3-19,3 mm RW 6,5 mm RW

Checking values in brackets

Testoil-ISO 4113

ROV 300-1150 AB 1044 DL

supersedes 9.82

Komb.-Nr. 0 400 648 116

KHD company

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3

F 8 L 413 FW

153 kW (208 PS) / 2300 min-1

 $0 - 45 - 90 - 135 - 180 - 225 - 270 - 315^{\circ} : 0,5^{\circ} (:0,75^{\circ})$ 

Change-over point

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	troke (	1,95-2,15) 2,00-2,10	mm (from BDC)	
Rotational speed	Control rod	Fuel delivery	Difference	l

Port closing diproc		2,00-2,10			<del></del>	T
Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pra-tensioning (torque-c)ntrol valve)
1	2	3	4	2	3	6
1150	9,-9,2	7,9 - 8,1	0,3(0,6)			
300	5,9-6,1	0,9 - 1,5	0,3(0,5)			
			[			

Adjust the fuel delivery from each cutlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding s	ieeve travel
0.00	rev/min Control	Control rod (ta	deflection		Control rod travel	Degree of deflection		Control rod travel	_	1
of control	rod travel	mm rev/min (28	of control lever	rev/min	mm (4)	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
-max.	1150	15,2-17,8		~	-	ca.11	100 300 540-6 750	min.7,5 5,9-6,1 00 = 2,0 0,1	300 750 1190	1,4-1,6 4,0-4,3 8,5
Ca.04	4,0	1225-1255 0- 1,0				320-400 3a)	, 30		. , 50	0,0

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil tem		intermediate speed	ediate speed			fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min (4a)	rev/min	cm³/1000 strokes	tev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1150	78,5-80,5	1196-1200*	800	77,5-81,0	100	119-129	1150	  9,1-9,2
	(76,5-82,5)			(76,0-83,0)			350	9,4-9,6
							500	9,5-9,6
					100-	220 (80-240)		

Checking values in brackets

9.83

<sup>\*\*</sup> Set control-rod stop to contact at 600 min/!

<sup>\* 1</sup> mm less control rod travel than col. 2

# Test Specifications Fuel Injection Pumps (A) and Governors

40

WPP 001/4 KHD 4,1 c 2

1. Edition

En

supersedes KHD compan F 4 L 913

engine

Road-building machine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

### A. Fuel Injection Pump Settings

PES 4 A 80 D 410/3 RS 2523

Komb - Nr. 0 400 864 058

Port closing at prestroke

Festoil-ISO 4113

(1,85-2,05)

mm (from BDC)

Rotational speed rev/min	Control rod travel	Fuel delivery cm·/100 strokes	Difference cm '' 190 strokes	Control rod travel mm	Fuel delivery cm //100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250 325	11,6+0,1	6,9-7,0	0,25(0,4) 0,2 (0,35)			

RSV 325-1250 A 8 B 540-1 L

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of deflection of control lever	rated speed Controt rod travel mm		Interme	diate rate	ed speed	Control- lever deflection in degrees	Lower rev/min 8	rated speed Control rod travel mm	1131	raue control   Control rod   travel   mm
Toose	l l	0,3-1,0	-	-	-	ca.17	325 100 325	6,5 min.19,5 6,9-7,1	1250 500 965	11,6-11,7 12,1-12,2 11,8-12,0
ca.56	10,6 4,0 1555	1290-1300 1390-1420 0,3-1,7					630-69			

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

(20)	it-load stop	6 Potational- speed limitat		Fuel de: very characteristics		uel delivery 5	Control ro		
Test oil to	cm <sup>1/1000</sup> strokes	changed to 1 rev/min 3	rev-min	cm:/1000 strokes 5	revimin	cm=1000 strokes 7	rev/min 8	travel mm 9	
250	68,5-69,5 (67,0-71,0)	1290-1300*	800	64,5-66,5 (62,5-68,5)	-			-	

Checking values in brackets

\* 1 mm less control rod travel than col 2

11.83



# Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 7,0 b 3

1. Edition

En

PE 6 P 110 A 320 RS 260 Z

RSV 250-1250 P0/374/2 R

supersedes

engine TAMD 70 D 206 kW (280 PS)

Komb.-Nr. 0 401 876 190

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-150 4113

(2,75-2,95)

mm (from BDC)

Rotational	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning itorque-confrol valves
rev/min	mm 2	cm+/100 strokes	cm <sup>-</sup> , 100 strokes 4	mm 2	cm·/100 strokes	mm Ö
1000	11,9+0,1	14,3-14,5	0,4 (0,8)			2,5 ± 0,1
250	5,9-6,1	1,1-1,5	0,25(0,55	•		(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Uppe	rated speed	revimin	Intermed	diate rated	speed	(4)		rated speed		rque control
	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control- lever deflection in degrees 7	rev/min 8	Control rod travel mm	revimin	travet mm
loose	800	0,3-1,0	-	-	-	ca. 17	25 <b>0</b>	5,5	-	-
	x =	4,5					100	min. 20,0	•	
ca. 47	10,9 4,0 1450	1295-1305 1340-1370 0,3-1,7					250 430-49	5,9-6,1 0 = 2,0		

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

	ill-load stop	Rotational- speed limitat		ei delivery aracteristics	Starting for	Jei delivery 5	40	e stop Cantrol rod
Test on te	cmr /1000 strokes	Note changed to : rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm v1000 strokes 7	rav/min 8	travel mm 9
LDA 1000	1,2 bar 143,0-145,0 (140,0-148,0)	1295-1305 *	LDA 1000	0 bar 86,0-89,0 (83,0-92,0)	100	160,0-200 = 20,0 21,0 mm R		5,9-6,1

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

BOSCH

Geschaftsbereich KH. Mundendienst. Kft-Ausrustung. § 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

# D. Adjustment Test for Manifold Pressure Compensator PEN 7,0 b 3

Pump/governor	Setting	Measurement	Control rod travel- difference
	Gauge pressure =	bar - Gauge pressure = bar	imm (1)
PE 6 P RS 260 +RSV PO/374/2R	1,0	0,36	11,7 - 11,8 8,6 - 8,7
	;		
			•
•			
· :		:	:

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

# Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 FOR 5,9 d

4. Edition

En

PES 6 A 90 D 210 RS 2628 Komb.-Nr. O 400 866 104 RSV 325-1200 A0B 2140 L **▲0C 2140 L**  supersede 6.83 company Ford

Dover 363 T/C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

At port closing the locating pin must engage in

2,7-2,8 the slot of the pointer.

Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	6
1175	11,5+0,1	8,4 - 8,5	0,3(0,45)		4	
350	5,1-5,3	0,5 - 1,1	0,2(0,4)			***
		]			ŧ	
						9

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Testoil-ISO 4113

Degree of deflection of control	rated speed rev/min 2	Control rod travel mm 3	Intermediate Degree of deflection of control lever	rated spe rev/min 5	ed Control rod travel mm	Degree of deflection of control lever	rated spe rev/min 8	ed. Control rod travel mm 9	3 Tor	que control Control rod travel mm 11
loose	008 X =	0,3 - 1,0 4,0	-	**	-	ca. 38		4,7 min.19,0 5,1-5,3	-	-
ca. 67	10,5 4,0 1540	1240-1250 13 <b>7</b> 5-1405 0,3 - 1,7	,				490-5	50= 2,0 max. 1,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	ad stop	6 Rotational- speed limitat.		el delivery aracteristics	Starting Id <del>le</del>	fuel delivery	(5a) Idle stop		
Test oil tern rev/min 1	cm <sup>3</sup> /1000 strokes	Note: changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/mın 6	cm <sup>3</sup> /1000 strokes	rev/min 8	Control rod travel mm 9	
LDA 1175	0,7 bar 83,5-84,5 (81,5-86,5)	1240-1250 *	500	0 bar 49,0 - 51,0 (47,0 - 53,0)	i (	76,0 - 90,0 73,0-93,0) = 19,0-21,0 mm RW	1	-	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.83

#### D. Adjustment Test for Manifold Pressure Compensator

FOR 5,9 d

-2-

Testain =

1175

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure har	Gauge pressure - bar	mm (1)
PES 6 ARS 2628	0,7		11,5 - 11,6
withAOB 2140 L		0	10,1 - 10,2
		0,48	11,1 - 11,2
		0,30	10,2 - 10,4
		• • • • • • • • • • • • • • • • • • •	

Notes

(1) when n

rev/min and gauge pressure >

bar til- maximum full-load control rod travell

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 1 a 3

6. Edition

PES 4 A 85 D 410/3 RS 2638

RSV 325-1150 A 8 B 2168 L A8C 2168 L

supersedes 9.83 company

Komb.-Nr. 0 400 864 054

1 - 3 - 4 - 2 je  $90^{\circ} \pm 0.5^{\circ}$  (- 0.75°)

BF 4 L 913 66 kW(90 PS)

Symbol S 29 =

/ 2300 min-1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

DX 92 (1) tractor

60 kW (82 PS)

/ 2300 min-1

A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65)

Festoil-ISO 4113

mm (from BDC)

Symbol \$ 28 =

Εn

tractor DX 86 (2) BF 4 L 913 T

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)
revimin	mm (2)	cmi¥100 strokes	cm <b>3</b> / 100 strokes	mm	cm\$ 100 strokes	mm
1	2	3	4	2	3	6
1150	11,8+0,1	8,2 - 8,3	0,3(0,45)	10,6+0,1	7,5 - 7,6	
325	7,7-7,9	0,9 - 1,5	0,2(0,4)	7,7-7,9	1,0 - 1,6	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1 Uppe	er rated speed		Interme	diate :ate	d speed	(4)		rated speed	(3)	rque control
Degree of deflection of control lever	Control rod travel min	Control rod travel mm rev-min	4	5	6	Control lever deflection in degrees 7	fev/min	Control rod travel mm	rev.miri	Control rod travel mm
loose	800 x =	0,3 - 1,0 4,0	-	-	4	ca.29	325 100	7,3 min.19,5	1150 500	11,8+0,1
ca.53	10,8 4,0 1495	1190-1200 1325-1355 0,3 - 1,7					325 700-760	7,7-7,9	965	12,0+0,2

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(40)	ill load stop	Rotational Speed limital (3a) Fuel delivery characteristics		_	Starting ! Idle	uel delivery 5	4a) Idle stop		
rev/min	cm <sup>3</sup> 1000 strokes	changed to 1 revimin	rev/min	cm³/1000 strokes	iev/min	cm <sup>g</sup> -1000 strokes 7	rev/min 8	travel mm	
(1) 1150	82,0-83,0 (80,0-85,0)	1190-1200*	800	79,0-82,0 (76,5-84,5)	100	108,5- 118,5 = RW 16,9 - 17,4mm	-	-	

Checking values in brackets

\* 1 mm tess control rod travel than col. 2

#### **B. Governor Settings**

	r rated speed Control rod travel mm		Interme	diate rated	speed	Control- lever deflection in degrees 7		rated speed Control rod travel mm	9	rque control Control rod travel mm
1 oose	800 × =	0,3-1,0	-	-	-	ca.26	325 100	7,0 min.19,0	1150 500	10,5+0,1 11,2+0,1
Çe. 36	9.6 4.0 1475	1220-1230 1325-1355 0,3-1,7					325 720 - 780	7,4-7,6 = 2,0	900	10,9+0.3

# C. Settings for Fuel Injection Pump with Fitted Governor

20)	Hoad stop	Speed infinds:	Ga Fuel delivery characteristics		Starting f	uel delivery 5	Contro	
	mp. 40°C (104°F) cm³/1000 strokes	Note: changed to) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm-/1000 strokes 7	rev/min 8	travel mm 9
(2) 1150	74,5-75,5 (72,5-77,5)	1220-1230*	800	65,5-68,5 (63,5-70,5)	100	108,5-118,	5 -	-

Checking values in brackets

# Testoil-ISO 4113

#### **B.** Governor Settings

	er rated speed	rev/min Control rod travel mm rev/min	Interme	ediate rate	d speed	Control- lever deflection in degrees 7	rev/min 8	r rated speed Control rod travel mm	rev/min	rque control Control rod travel mm
29										

# C. Settings for Fuel Injection Pump with Fitted Governor

(40)	ill-load stop	6 Rotational- speed limitat:		el delivery aracteristics	Starting f	Control rou	
Test oil te	emp. 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note: changed to) rev/min	rev/min 4	cm <sup>3</sup> /1000 strokes 5	rev/miñ 6	cm <sup>3</sup> /1000 strc \es 7	tr≊vel mm 9
-	2						
							 wel then so

Checking values in brackets

\* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps 2 and Governors

WPP 001/4 KHD 9,5 b

1. Edition

PE 6 AM 80 B 310 RS RS 2002 RQ 250/1075 A 314 D A 386 D supersedes 3.66

company engine

KHD F 6 L 714 A

"diesel" = flap touching

"gasoline" = flap free-standing

( \_\_ . . . A 314 D)
All lest specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fual Injection Pump Settings

Port closing at prestroke

 $2,15 \cdot 0,1$ 

mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1000	12	7,4 - 7,8	0,4			
	9	3,9 - 4,7				
	15	10,3 - 11,4				
200	9	2,9 - 3,7				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

1		Full-load s	•	_		Idle spec	_			Torque o	
	Control rod	Setting po	Control red travel mm	Test sper Control rod travel mm		Setting p	Control rod travel	Test spe	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11	12
1050	14,0-14,8	1050	14,4	1100 1120 1140 1190	14,2-14,4 4,5-12,6 0 - 9,0	440	0	200 250 300 340	4,8-7,5	600	16,0-16,2 15,5-15,9 14,5-14,9

Torque-control travel on flyweight assembly dimension a

Speed regulation At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever / 104°E/	Control rod stop	Fuel deliv	ery characteristics (3b)	Starting fi	d Control
rev/min 1	cm³/-1000 strokes	rev/min 3	rev/min	cm <sup>1</sup> /-1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes / mm
1050	( diesel ) 72,5 - 74,5 ( gasoline ) 78,5 - 82,5	400	800 600	74,5 - 77,5 75,0 - 78,0	100	mind. 9,9

Checking values in brackets

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 5,5 h 1. Edition

PES 6 MW 80/720 RS 1015

ROV 300-1600 MW 47

supersedes-

0 403 446 142

1 - 5 - 3 - 6 - 2 - 4

0 - 60 - 120 - 180 - 240 - 300

company Iveco-Fiat 8060.24.670

All test specifications are valid for Bosch Fuel injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres	troke	2,10-2,20 (2,05-2,25)	mm (from BDC)	RW 9 - 1	2 mm	
Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/miñ	mm 2	cm <sup>3</sup> /100 strok <b>es</b>	100 strokes	mm 2	cm <sup>3</sup> /1 <b>00</b> strokes 3	mm 5
1000	11,2+0,	6,0-6,2	0,35(0,6)			
300	7,3-7,4	1,05-1,45	0,35(0,55	5)		
1600	11,2+0,		0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in [

#### B. Governor Settings

deflection of control	rev/min Control rod travel	Comuci rod travel mm rey/min	(19)	Intermediate Degree of deflection of control lever	rated spo rev/min 5	Control rod travel mm 4	Lower rated: Degree of deflection of control lever	rev/min	Control for travel mm	Sliding Sl rev/min 10	mm
max.	1640 1850	15,2-1 0 - 1	7,8 ,0				ca. 16		min.8, 7,3-7,		
ca. 64	10,2 4,0						330-800				
							38)				

Torque control travel a =

Test electrically unlocked starting delivery with 24 V.

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 2b limitation intermediate speed	Fuel deliv high idle s	ery characteristics (58)	Starting Idle switchin		travel	Control (5) Control rod travel
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	s s	mm 9
1000	60,0-62,0 (58,5-63,5)	1640-1650*	1600	69,0-73,0 (67,0-75,0)				

Chacking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 FIA 5,5g 1. Edition

Festoil-ISO 4113

RQV 375-1600 MW 49 PES 6 MW 90/720 RS 1015 0 403 446 146

supersedes -

company: IVECO-Fiat 8062.24.668 140 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Beriches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	(2,45-2,65) Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/miñ 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1000	11,9 <sup>+0,1</sup>	7,6-7,8	0,35(0,6)			_
300	8,3+0,1	1,0-1,4	0,35(0,55			
1600	11,9+0,1		0,5 (0,7)	1		
500	10,4+0,2					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated sp	1	Lower rated	speed	la	Sliding s	leeve travel
deflection	rev/min Control rod travel mm	Control rod travel mm rev/min		Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	control rod travel mm 3	rev/min	(1) mm 11
max.	1640 1950	15,2-17 0-1,					ca. 16	375 100	8,3-8,4 min.9,0		
ca.63	10,9	1640-16 1810-18	50 40				390-880				
							39				

Torque control travel a =

# C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) timitation intermediate speed	Fuel deliv	ery characteristics (5a)	Starting Idle switchin	. 0	Torque-	Control 5  Control roc travel
rev/min	cm³/1000 strokes	rev/min 40	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1000	0,5 bar 76,0-78,0 (74,0-80,0)	1640-1650*	LDA 1600 LDA 500	0,5 bar 82,0-86,0 (80,0-88,0) 0 bar 42,5-44,5 (40,5-46,5)	200	160,0-180,0 (157,0-183,0		

Checking values in brackets 4-

\* 1 mm less control rod travel than col. 2

Testatn =

500

rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	diminution Control red travel- difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
graph managraphic and a second			
RS 1015 with	0,5		11,9 - 12,0
RQVMW 49		0	10,4 - 10,5
		0,21	11,5 - 11,6
		0,18	10,8 - 10,9
			! 
	) 	T	

Notes

(1) when n

rev/min atid gauge pressure

bar ( maximum full load control rod travel)

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 8,8k

5. Edition

PES 6 MW 100/320 RS 1016 ROV 300-1300 MW 25 Komb.-Nr. 0 403 446 123

estoil-ISO 4113

supersedes 11.82 RVI company MIDRO6.02-12 engine 125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port-closing mark 10,5°

Rotational speed	Control rod traval	(2,95-3,15) Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm <sup>3</sup> / 100 strokes 4	mm 2	cm³/100 strokes 3	mm 6
1300	11,2+0,1	9,0-9,2	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55	)		
900	11,2+0,1		0,5 (0,7)		<u> </u>	
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated spo	eed	Lower rated	speed	1.	Slidings	leeve travel
deflection	rev/min Control rod travel mm	travel \	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 3 9	rev/min 10	mm 11
max.	1300 1600	15,2-17, 0 - 1,				ca. 13	200 300	max.7,5 5,9-6,0		
ca.62	10,2 4,0					340-600				
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel deliv	ery characteristics (58) Starting idle switching				Control 5  Control rod
tev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	យេឃ
,	2	3	4 _	5	6	7	8	9
LDA .1300	0,67 bar 90,0-92,0 (88,0-94,0)	1345-1355*	LDA 900 LDA 500	0,67 bar 88,0-92,0 (86,0-94,0) 0 bar 59,0-61,0 (57,0-63,0)	100 300 100-2	min. 100,0 9,5 - 13,5 (7,0 - 16,0) 230 (80-250)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

11.83

# D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500  Pump, governor	rev/min decreasing pressure - in XXXXXX	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure = bar	mm (1)
RS 1016 mit Mw25	0,25	0,67 0 0,22	10,8 - 10,9 11,2 - 11,3 10,2 - 10,3 10,3 - 10,4
		·	!
		:	

(1) when n =

revimin and gauge pressure #

bar (= maximum full-load control rod travel)

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 RVI 8,8 f 2. Edition

PES 6 MW 100/320 RS 1016

ROV 300-1400 MW 25-2

supersedes -

RVI

0 403 446 129

Port closing at prestroke

Testoil-ISO 4113

company engine

1-5-3-6-2-4 \* Start of delivery mark is 8° after 0 -60 -120-180-240-300 start of delivery at control-rod

MIDR 06.02-12

travel 10,5 mm

125 kW (170 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings ....

(2.95-3.15)

mm (from 80C) RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
1400	11,1+0,1	9,1 - 9,3	0,35(0,6)			
300	5,8-5,9	0,95-1,35	0,35(0,55			
900	11,1+0,1		0,5 (0,7)			
500	9,3+0,1		0,35(0,6)			
	ŀ					

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		intermediate	rated sp	eed	Lower rated	speed	1	Stiding s	leeve trave!
	rev/min Control rod travel mm	Control rod ta travel mm rev/min (2a)	Degree of deflection of control lever	rev/min	control rod travel mm 4	Degree of deffection of control lever 7	rev/min 8	Control rod travel mm 3	rev/min	mm 11
max.	1400 1650	15,2-17,8 0-1,0	-	-	-	ca.13	300 200	5,8-5,9 max.4,4		
ca. 62	10,1	1440-1450 1550-1580					490-	550 = 2,0		
						<b>3a</b>				

Torque control travel a =

#### C. Settings for Fuel injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) 2		Rotational-speed (2b) limitation intermodate speed			Starting fuel delivery 6 Idle		Torque- travel	Control (5) Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 44	rov/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm	
1	2	3	4	5	6	7	8	9	
LDA 1400	0,5 bar 91,0-93,0 (89,0-95,0)	1440-1450*	LDA 900 LDA 500	0,5 bar d6,5-90,5 (84,5-92,5) 0 bar 53,5-55,5 (51,5-57,5)	100 100-	94,0-104,0 (91,0-107,0) 230 (80-250)			

Checking values in brackets

\* 1 mm less control rod travel than col 2

10.83

BOSCH

### D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/nin decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
RS 1016 with	0,12		9,8 - 9,9
RQVMW 25-2		0,16	10,6 -10,7
		0	9,4 - 9,5
		0,5	11,1 -11,2
i i		6 · · · · · · · · · · · · · · · · · · ·	

Notes

(1) when n

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

Testoil-ISO 4113

# Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 IHC 7,6 L

143.5 kW

3. Edition

PES 6 MW 100/320 RS 1108 RQV 350-1300 MW 45

0 403 446 140

restolisto aria

company IHC engine DT 466 B

Nozzle-and-holder assembly 1 688 901 016 (207 + 3 bar)

Test-pressure line

1 000 301 010 (207 . 3 20

1 680 750 008
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at pres	troke	(2 95-3 15)	mm (from BDC)	8W = 9.0-	12,0 mm	
Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
900	11,7+0,1		0,35(0,6)			
350 1300 500	5,9-6,0 11,7+0,1 9,0-9,1		0,35(0,55) 0,65(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		intermediate	rated so	eed	Lower rated	speed	1	Sliding s	leeve travel
deflection of control	rodtravel	Control rod ta travel mm rev/min 28	Degree of deflection of control lever	rev/min	control rod travel mm 4	Degree of deflection of control lever	rev/min 8	control rod travel mm 3	rev/min	mm 11
max.	8,0 0,1	1440-1505 1550	-	•	-	ca.14	10° 350	min.9,0 5,9-6,0		
ca.61,5		1360-1380 1475-1485				380-700				
						(3a)				

Torque control travel a =

mm

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		intermediate speed	high idle s	Fuel delivery characteristics 58 high idle speed Sb		fuel delivery 6	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 900	0,9 bar 95,5-97,5 (93,5-99,5)	1360-1380*	LDA 1300 LDA	0,9 bar 99,5-103,5 (97,5-105,5) 0 bar 52,5-54,5 (50,5-56,5)	350 220- 10	RW 19-21 140-180 (137-183) 16,0-20,0 (13,5-22,5) 280(210-290) 0 (80)	Lock'	ng king

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

#### D. Adjustment Test for Manifold Pressure Compensator

Testain - 500	rev/min increasing pressure - in-	par gauge pressure	
Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure - bar	Gauge pressure bar	mm (1)
RS 1108 with MW 45	0,9		11,7 - 11,8
		0	9,0 - 9,1
		0,2	9,5 - 9,6
	1 1 1 1 1	0,57	11,2 - 11,3

Notes (1) when n

rev/min and gauge pressure

bar ( maximum full load control rod travel)

#### Notes:

- Carry out pump adjustment only with original overflow valve and IH hose with restriction of 1.2 mm diameter.
- Adjust locking prior to sleeve check.
- Do not drive at more than n = 500 1/min in unlocked condition.
- Set low idle at stop screw.
- Set shutoff stop 1.5 2.0 mm before stop.

Testoil-ISO 4113

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 IHC 7.6 n

2. Edition

PES 6 MW 100/320 RS 1112 ROV 350-1300 MW 46 0 403 446 141 Test-pressure line 1 680 750 008

supersedes .83 company IHC DTI-466 C 154,5 kW

Nozzle-and-holder assembly 1 688 901 016 (207 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

Port closing at pres		4,00-4,10 3.95-4.15)	mm (from BDCR)	N = 9.0 -	12,0	
Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/miñ	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes 4	mm 2	cm <sup>3</sup> /1 <b>00 strokes</b>	mm 6
900	10,5+0,	10,3-10,5	0,35(0,6)			
350	5,4-5,	1,8-2,2	0,35(0,55			
1300	10,5+0,		0,65(0,6)			
500	8,4+0,	1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate			Lower rated	speed	lossesses	Silding si	eeve travel
deflection		Control rod ta	Degree of deflection of control		Control rod travel	Degree of deflection of control	rev/min	Control rod travel	rev/miñ	mm (1)
	mm 2	rev/min (2a)	lever 4	rev/min 5	mm (4)	1ever	8	9	10	11
max.	8,0 0 - 1	1440-1505 1600	ca. 21 <u>+</u> 2,5	595- 605	1,9-2,1	ca.14	100 350	min. 9,0 5,4-5,5		
ca.47,5 +2,5	4,0	1470-1480		435- 465	7,9-8,1	370-650				
						<u>36</u>				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed 20 limitation speed	Fuel delivery characteristics (Se) high ide speed (Sb)		Starting idle switchin		Torque- travel	Control (5) Control roc travel
rev/min	cm³/1000 strokes	rev/min 4	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm³/1000 strokes	rev/min S	mm 9
LDA 900	0,9 bar 103,0-105,0 (101,0-107,0)		LDA 1300 LDA 500	0,9 bar 107,0-111,0 (105,0-113,0 0 bar 63,5-65,5 (61,5-67,5)	100 350	RW 19-21 140-180 (137-183) 18,0-22,0 (15,5-24,5) 80(210-290) (80)	Locki Unloc	

Checking values in brackets

\* 1 mm less control rod travel than col 2

12.83

620

# D. Adjustment Test for Manifold Pressure Compensator

*est at n = 500	revimin increasing pressure - in	bar gauge pressure		
Pump/governor	Setting	Measurement	diminution Control rod travei- difference	
	Gauge pressure = bar	Gauge pressure =	bar .mm (1)	
RS 1112 mit MW 46	0,9 bar	0 0,28 0,51	10,5 - 10,6 8,4 - 8,5 9,0 - 9,1 10,0 - 10,1	
	•		· ;	
	•		: :	

Notes
(1) when n =

revimin and gauge pressure =

par (= maximum full-load control rod travel)

#### = Notes:

- Set pump only with original overflow valve and IH hose with restriction 1.3 mm diameter.
- Before testing the sleeve position, first set interlock.
- When unlocked, n = 500 1/min is maximum speed.
- Set low idle at stop screw.
- Set shutoff stop 1.5 2.0 mm before shutoff.

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 PER 8,8 f

1. Edition

PES 8 MW 100/720 RS 1113

RQV 250-1400 MW 37-2

0 403 448 119

Testoil-150 4113

1 - 8 - 7 - 5 - 4 - 3 - 6 - 2 0 - 45- 90-135-180-225-270-315

supersedes...

company Perkins TV 8.5 40 M

242 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

FB mark is at RW 10.5 mm after FB and 17° NW

# A. Fuel Injection Pump Settings 3,00-3,10

Port closing at pres	troke	2.95-3.15)	mm (from BDC)	W = 9 -	12	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
	10.000	44 0 43 1	0.35/0.6)			
1400	13,8+0,1	11,9-12,1	0,35(0,6)			
250	8,2-8,3	1,4-1,8	0,35(0,55	)		
900	13,8+0,1		0,5 (0,7)			
}	l					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	paed		Intermediate	rated spo	ed .	Lower rated	speed	1 _	Sliding s	ieeve travel
deflection of control	rod travel	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min	control rod travel mm 4	Degree of deflection of control lever 7	rev/min 8	control rod travel mm 3	r <del>ev</del> /min	mm 11
max.	1400 1600					ca. 15	100 250	min.9,7 8,2-8,3		
ca. 64	12,8 4,0					270-500				
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		Rotational-speed 2b limitation intermediate 30000	Fuel deln high idle s	ery cheracteristics (56)	Starting Idle switchin	•	Torque-	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	revimin 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1400	119,0-121,0 (117,0-123,0		900	115,0-119,0 (112,5-121,5	) 250	(87,0-103,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

# Test Specifications **Fuel Injection Pumps** and Governors

PEN 7,0 b WPP 001/4 4. Edition

En

PE 6 P 110 A 320 RS 260

EP/RSV 250-1250 P0/374/2 R

supersed 10.78 companyVolvo-Penta engine THAMD 70 B

RS 260 Y

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2.8 + 0.1

 $_{\text{mm (from BDC)}}$  (Checking tolerance  $_{-0.05}^{+0.15}$ )

	<u>-</u>	,0 , 0,1				-0,03
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>17</sup> 100 strokes	100 strokes	mm	Cm / 100 strokes	l mun
1	2	3	4	2	3	6
1000	12	14,3 - 14,8	0,6			2,5 + 0,1 **
600	9 12 15	8,0 - 9,2 14,7 - 16,4 20,2 - 22,3				(max. 2,2-2,9)
250	6	0,9 - 1,3	0,25			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

rated speed						r rated spe		3 Torque control		
revimin	travel	deflection of control lever	rev/min	travel	deflection of control lever	rev/min	travel	rev/min	travel	
2	3	4	5	6	7	8	9	10	11	
1250	16,0				ca.19	250	6,0	-	-	
1330	6,3	without	auxol	liary spri	na	100	19-21			
1300 1360	9,5-12,0 3,2-5,5	1				400 560	1,7-3,9			
	1250 1300 1330	1250 15,0 1300 10,3 1330 6,3 1300 9,5-12,0 1360 3,2-5,5	Control rod travel   Degree of deflection of control lever   3	Control rod travel   Degree of deflection of control lever   3   1250   16,0   1300   10,3   1330   6,3   without auxo   1300   9,5-12,0   1360   3,2-5,5	Control rod travel   Degree of deflection of control lever   1250   16,0   1300   10,3   1330   6,3     1300   9,5-12,0   1360   3,2-5,5     1300   3,2-5,5     1300   10,3   1360   3,2-5,5     1300   10,3   10,3   10,	Control rod travel   Degree of deflection of control lever   7   1250   15,0   1300   10,3   1330   6,3     3,2-5,5   1360   3,2-5,5   Control rod travel   Degree of deflection of control lever   6   7   7       7       7       7         7	Control rod travel   Degree of deflection of control lever   Tev/min   S   Control rod travel   Degree of deflection of control lever   Tev/min   S   Control rod travel   Degree of deflection of control lever   Tev/min   S   Control rod travel   Tev/min   S   Control rod deflection of control lever   Tev/min   S   Control rod travel   Tev/min   S   Control rod deflection of control lever   Tev/min   S   Control rod deflection   Tev/min   S   Control rod deflection   Tev/min   S   Control rod deflection   Tev/min   Te	Control rod travel   Control rod travel   Degree of deflection of control lever   S   Control rod travel   Degree of deflection of control lever   S   Control rod travel   Degree of deflection of control lever   Tev/min   S   Control rod deflection of control lever   Tev/min   S   Control rod deflection of control lever   Tev/min   S   S   S   S   S   S   S   S   S	Control rod travel   Control rod travel   Control rod deflection of control lever   Fev/min   S   Control rod travel   Control rod deflection of control lever   Fev/min   S   Control rod deflection of control lever   Fev/min   Fev/min   To   Ca.19   Control rod travel   To   Control rod deflection of control lever   Fev/min   To   To   Ca.19   Control rod travel   To   Control rod travel   To   Control rod deflection of control rev/min   Fev/min   To   Ca.19   Control rod travel   To   Control rod deflection of control rev/min   Fev/min	

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	nd stop	6 Rotational- speed limitat		el delivery racteristics	Starting Idle	fuel delivery	5a Idle stop	
	. 40°C (104°F) cm <sup>3</sup> /1000 strokes 2	Note changed to rev/min	rev/min	cm <sup>3</sup> /1000 strokes 5	revimin	cm <sup>3/1</sup> 000 strokes	rev/min	Control rod travel mm
250	LDA 1,2 bar		LDA	0 bar				
1000	149,0-152,0	1295-1305*	1000	76,0 - 81,0	100	160 - 190		
					250 Stre	11 - 15 µg. max. 2,5	) **	
(incre	se by 3,0 cm	)						./.

Checking values in brackets

\* 1 mm less control rod travel than col. 2

<sup>\*\*</sup> In case valve-spring spread is higher, change the initial tension accordingly.

# Testoil-ISO 4113

#### **B. Governor Settings**

Degree of deflection of control lever	r rated speed Control rod travel mm	rev/min Control rod travel mm rev/min				Control- lever deflection in degrees	rev/min	er rated speed Control rod travel mm	3 To	rque control (Control red travel mm
ca.47	1250 1300 1330 1360	16,0 10,8 6,8 9,5-12,0	with spri	out au	xilia	ca.19	250 100 250 400	6,0 19 - 21 5,7-6,3 1,7-3,9	-	-
28)	1360 1460	3,2-5,5 0,3-1,0	spri		rary		560	0 - 1		

#### C. Settings for Fuel Injection Pump with Fitted Governor

40	ill-load stop	speed limitat		el delivery aracteristics	Starting I	uel delivery 5	<b>4a</b> ) ldl	e stop
rev/min	emp 40°C (104°F) cm <sup>3</sup> /1000 strokes	Note changed to ) rev/min	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>9</sup> /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
	LDA 1,2 bar		LDA	0 bar				
					100	160-190		İ
260Y				di	250 spersi	11- 15 on max. 2,	5 **	
1000	138,0-140,0	1295-1305*	1000	86,0-89,0				

Checking values in brackets

#### D. Adjustment Test for Manifold Pressure Compensator

Test at n =

500

rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure + bar	mm (1)
260 with 374/2R	0,78 - 0,81	min 0,04	
260Y with 374/2R	1,00 - 1,03	0,14 - 0,27	

Notes

(1) when n =

rev/min and gauge pressure

bar ( maximum full-load control rod travel)

En

<sup>\* 1</sup> mm less control rod travel than col. 2

WPP 001/4 MAN 11,4 a

4. Edition

PES C P 120 A 320 LS 429

**estoil-ISO 4113** 

ROV 250-1100 PA 582 (1)

supersedes83

Komb.-Nr. 0 402 046 223 (1) 0 402 046 222 (2) RQ 250/1100 PA 581 (2)

Ď2566 MKUL engine 235 kW (320 PS)

At test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC) Zy1.6 Port closing at prestroke

Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	12,9 +0,	22,0 - 22,4	0,5(0,9)			
250	6,2-6,4	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

RQV .. PA 582

Upper rated s	peed			Intermediate	rated sp	eed	Lower rated	speed	<b>l</b>	Sliding sl	eeve travel
deflection of control	Control rod travel	travel	. 1	Degree of deflection of control	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm (1)
lever 1	mm 2	rev/min (3	اك	lever	5	6	7	8	9	10	11
·max•	1100	15,2-17	,8				ca. 13	ļ	1	1	1,6-1,7
ca. 68	10,4	1225-12	255	•			355-47	1	6,2-6,4	500 800	4,0-4,3 5,5-5,7
	1400	0 -	1,0				(3a)			1100	8,1

Torque control travel a =

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed 20 limitation intermediate speed	Fuel deliv high idle s		Starting idle switchir	. —	Torque- travel	Control Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm c +0,1
LDA 750	1,0 bar 220,0-224,0 (217,0-227,0)	1140-1150*	LDA 1100 650 LDA 500 LDA	212,0-218,0 0,29 bar 138,0-144,0 0 bar	230		1 750	12,9 12,5

Checking values in brackets

\* 1 mm less control rod travel than col. 2

to.83

\*Checking tolerance ± 3 cm<sup>3</sup>

Shedkir: Shedkir: Should	2 15 0MF	Serings			$\sqrt{4}$		ibo ut seditedani	Test spe	· · · · 5	irwyje '	3
· £ , ~ · ·	Transport of the second of the	rev m n	22.03ee	Control 130 Mare men 5	rev :nin	ray mo	leem leemen leemen leemen leemen	:	inse Sinners:	194 m U	Cotto that I trave I mm
600	19,2-20,8	600	20,0	10,4	1145-116 1185-121	0  250	6,3	100			11,4-11,5
VH =	max. 46°		!	1300	ŀ	į	1			925	12,5-12,7
				:		:		:			
	gntros traiver ont assembly it m	- PS-100 A	0,5	55	Se	eed requ	ation 11	45 -	1160 min	Ţ	it mm less control rod trave

### C. Settings for Fuel Injection Pump with Fitted Governor

governor	gerveryich control rever imp 40 0 104 F	Control todistop	Ball and tense	ery character stius  *	Starting *Let delivery 6
revimin	cm = 1000 strakes	ray min	rey min	0m -100€ 5tt 1×85 5	ing taveling cm 1000 strokes / mm
LDA 750	1,0 bar 220,0 - 224,0 (217,0 - 227,0)		LDA 1100 650 LDA 500 LDA 500	1,0 bar 185,0 - 191,0 212,0 - 218,0 0,29 bar 138,0 - 144,0 0 bar 115,0 - 119,0	100 215,0-235,0

Checking values in brackets

## D. Adjustment Test for Manifold Pressure Compensator

500 .ev min tecreasing pressure - in par gauge pressure Testatin :

: 436 4611	increasing		
Pump governor	Setting	tteasurement	XXXXXXX Cantrol rad t <b>xxx</b> XXXXX
	Gauge pressure par	Gauge pressure bar	mm (3)
LS 429 mit RQVPA 582 und RQPA 581	1,0	0 0,29 0,58	12,9 - 13,0 9,6 - 9,7 10,5 - 10,6 12,3 - 12,5

(1) when a =

Εn

revimin and gauge pressure bar (= maximum full-load control rod travel)

<sup>\*</sup> Checking tolerance + 3 cm<sup>3</sup>

40

WPP 001/4 MAN 11,9 a 2

1. Edition

PES 6 P 120 A 720 LS 470-1

RQ 250/1100 PA 679

supersedes MAN

Komb.-Nr. 0 402 046 289

company D2866 KUL engine 265 kW

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2.75-2.95)

mm (from BDCZyl. 6; RW=9,0-12,0 mm

G. ( G. G. G. G. G. G. G. G. G. G. G. G. G.		(2,.0 2,00)				
Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve)
750	12,7+0,	1 23,0-23,2	0,5(0,9)			
250	5,4-5,	6 1,2-1,8	0,8(1,2)			; !
					!	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checking	g of slider	Full-load Setting p		-	cifications (4)	ldle spei Setting (			ecifications (5)	Torque	(3)
rev/min	Control rod travel mm	rev/min	Control red travel rnm	Control red travel mm 5	rev/min	rev/min 7	Control rod travel rmm 8	rev/min	Control rod travel mm	rev/min	travei
600 VH= m	19,2-20,8 ax. 46°	600	20,0	10,9 4,0 1350	1145-1160 1185-1215 0-1,0		5,5	250	5,4-5,6 360=2,0		12,7-12,8 11,9-12,0 12,3-12,5 11,7-12,0
Torque-c	ontrol travel	1	0,4	1		!		45-11	60 min	<u>.                                    </u>	1 mm less contro

on flyweight assembly dimension a = mm Speed regulation At

C. Settings for Figel Injection Pump with Fitted Governor

governor	delivery on control lever mp 40°C (104°F)	Control rod stop 3a	Fuel deliv	ery characteristics 36	Starting fuel delivery Idle speed		
rev/min	cm <sup>3</sup> /-1000 strokes	rey/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rod travel cm <sup>3</sup> /1000 strokes/ mm 7	
LDA 750	1,0 bar 230,0-232,0 (227,0-235,0)	-	LDA 500	0,4 bar 182,0-188,0 (179,0-191,0)	100	225,0-245,0 (221,0-249,0)	
LDA 1100	1,0 bar 218,0-224 0 (215,0-227,0)		LDA 500	0 bar 128,0-130,0 (125,0-133,0)	250	12,0-18,0 (9,0-21,0)	
	(213,0-227,0)						

Checking values in brackets

12.83

rod travel

BOSCH

revimin and gauge pressure =

(1) when n =

Fump/governor	00 Setting	decreasing pres		surement		Contro	giminution il rod travel gifference	***
Pumpryoverrior		pressure -	bar Gau	ge pressure :	par	mm	(1)	
PES 6 PLS +RQPA 679		1,0		0 0,40 0,19		:	12,7-12,8 9,4-9,5 11,2-11,3 9,9-10,3	
	:		:			:		
:	:		i ! !					
Notes	revimil	n and	bar (=	maximum tuli-load	i control re	d trave	1)	

-2-

WPP 001/4 MB 19,1 k

4. Edition

PE 12 P 110 A 320 LS 832

RQV 350-1150 PA 476 R

supersedes 4.82

Komb.-Nr. 0 401 840 060

Daimler-Benz

OM 404 A

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12 0-15-60-75-120-135-180-195-240-255-300-315°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed : rev/min	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Oifference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes  3	Spring pre-tensioning (torque-control valve) mm
1130	12,8+0,1	13,4-13,6	0,4(0,8)			
350	7,4-7,6	1,4-2,0	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

D 4 B	rev/min Control rod travel mm	Control rod travel mm (2a)	Intermediate Degree of deflection of control lever	rated spore	Control rod travel mm 4	Lower rated Degree of deflection of control lever 7	rev/min	Control rod travel mm 3	Sliding s rev/min 10	mm
max.	1150	15,2-17,8 1185-1195 1295-1325 0-1,0	-	•	-	ca.18		min.8,6 7,0-7,2 75 = 2,0	580	0,9-1,1 3,5-3,8 5,2-5,5 7,8
					<u> </u>	(3a)				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

	nd stop mp 40°C (104°F) 2	Retational-speed (2b) Ilmitation Intermediate speed  rev/min	high idle s	ery characteristics (58) peed (50) . cm <sup>3</sup> /1000 strokes	switchin	•	Torque- travel	Control (5) Control rod travel mm
rev/min	cm <sup>3</sup> /1000 strokes	3	4	5	6	7	8	9
LŪA	0,7 bar 134,0-136,0 131,5-138,5)	1185-1195*	LDA 500 LDA 700	0 bar 122,0-124,0 (119,0-127,0) 0,7 bar 136,0-140,0 (133,0-143,0)		130,0-150,0  126,0-154,0)	700 970	12,8+0, 13,1+0, 13,0+0, 12,8+0,

Checking values in brackets

\* 1 mm less contrôl rod travel than col 2

12.83

Testoil (SO 4113

MB 19,1 k

Pumpigovernor	Setting	Measurement	diminution Control rod traveli- difference	
	Gauge pressure =	par Gauge pressure =	bar · mm (1)	
PE 12 PLS 832	0,70		13,1 - 13,2	
+ RQVPA 476 R	•,	0	12,4 - 12,5	
+ KUVFX 470 K		0,39	12,9 - 13,0	
		0,31	12,5 - 12,7	
		:	: •	
		:		

Notes (1) when n -

revimin and gauge pressure #

par the maximum full-load control rod travell

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MAN 20,9 e 2

1. Edition

PE 12 P 110 A 520 LS 838 Komb.-Nr. 0 401 840 076

RQ 250-950 PA 583

supersedes-

company MAN

D 2542 MTE

1-5-9-8-3-4-11-10-2-6-7-12  $0-15-60-75-120-135-180-195-240-255-300-315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(2.95-3.15)

mm (from BDC)ZV1 \_ 12

Routional speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes 4	Control rod travel mm 2	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm
880	11,4+0,1	15,4-15,6	0,4(0,8)			
250	3,8-4,0	1,3-1,9	0,4(0,7)			i
	1		5 1			
	1	 		1		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG che	Control rod	$\overline{}$	Full-load s Setting po rev/min			rev/min	Idle spec Setting p rev/min 7	Control   rod travel		Control rod travel	rev/min	Control rod travel mm	3
550	15,6-16,	,4	550	16,0	10,4 4,0 1100		250	3,9	250	min.5,4 3,8-4,0 30 = 2,0		11,4-11 11,4-11	
										t e		†	

Torque-control travel on flyweight assembly dimension a =

965-995 min 1

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of governor of Test oil ter	delivery on control lever mp. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics	36)	Starting for	Control
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /=1000 strokes		rev/min 6	cm <sup>3</sup> /1000 strokes/mm
880	154,0-156,0 (151,0-159,0)	-	-	-		100	150,0-170,0 (146,0-174,0)

Checking values in brackets

12.83

Testoil ISO 412

## Test Specifications Fuel Injection Pumps 2 and Governors

40

WPP 001/4 MAN 17,4 a 2

1. Edition

PE 10 P 110 A 520/4 LS 846 Komb.-Nr. 0 401 849 171

RQ 250/1150 PA 659-1

supersedes - MAN

1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°) D 2540 MT 323 kW (439 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

(2,95-3,15)

mm (from BDC) Zyl. 10

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel aelivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,9+0,1	14,0-14,2	0,4(0,8)			
250	6,9-7,1	1,1-1,7	0,4(0,7)		1	<del></del>
					İ	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Checkin PRG che	g of slider ick (1)	Full-load		•	cifications (4)	ldle spec	-		cifications (5)	Torque	control 3
rev/min	Control rod travel mm 2	rev/min 3	Control rod travel mm	Control red travel mm 5	rev/min	rev/min	Control red travel mrn 8	rev/min	Control rod travel mm	rev/min	Control rod travel
600 VH =	19,2-20,8 max. 46°	600	20,0		1195-1210 1300-1330 0-1,0		7,0	250	min.8,5 6,9-7,1 390 = 2,0		11,9-12,0 11,9-12,1
								4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
orque-c	ontroi travel		0				11	95-12	10 min		1 mm less contro

#### C. Settings for Fuel Injection Pump with Fitted Governor

	lelivery on control lever mp. 40°C (104°F)	Control rad stop 3a	Fuel deln	very characteristics	330	Starting	fuel delivery
rev/min 1	cm <sup>3</sup> /-1000 strokes 2	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5		rev/min	cm <sup>3</sup> /1000 strokes/ mm
1150	0,9 bar 140,0-142,0 (137,0-145,0)		LDA 750 LDA 500	0,9 bar 134,0-138,0 (131,0-141,0) 0 bar 115,0-118,0 (112,0-121,0)		100	145,0-175,0

Checking values in brackets

12.83

rod travel

MAN 17,4 a 2

- 2

Pump-governor	Setting	Measurement	Control rod tra	diminution aver- difference	
	Gauge pressure :	bar Gauge pressure -	par mm (1	8	
PE 10 PLS 846	0,90		11,	9 - 12,0	
+ RQPA 659-1		0	11,	1 - 11,2	
		0,38	11,	7 - 11,8	
		0,33	11,	3 - 11,5	
			,		

Notes

(1) when n =

revimin and gauge pressure r

bar (in maximum full-load control rod travel)

**D9** 

WPP 001/4 MAN 17,4 a 4 1. Edition

PE 10 P 110 A 520/5 LS 846 Komb.-Nr. 0 401 849 181

ROV 250-1000 PA 677

1-8-7-6-3-5-2-10-9-4  $0-27-72-99-144-171-216-243-288-315^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$  supersedes company MAN D 2540 MTF 360 287 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	2,95-3,15) Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
700	13,1+0,1	16,3-16,5	0,4(0,75)			_
250	6,9-7,1	1,2-1,5	0,45(0,75			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated : Degree of deflection of control lever	rev/min Control rod travel mm	Control rod ta travel mm rev/min 2a	Intermediate Degree of deflection of control lever		Control rod travel	Lower rated Degree of deffection of control lever 7	speed rev/min 8	Control rod travel mm 3	Sliding s rev/min 10	min 11
max.	1080 11,2 4,0 1300	15,2-17,8 1040-1050 1170-1200 0-1,0	-	•	-	ca.12	250	min.8,5 6,9-7,1 460=2,0		2,0-2,5 6,5-6,7 7,8

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-rod Test oil ten		Rotational-speed (2b) iimitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)			luel delivery . 6	Torque- travel	Control (5)	
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	ov/min cm³/1000 strokes		cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9	
LUA 700	1,0 bar 163,0-165,0 (160,5-167,5		LDA 1000 LDA 500	1,0 par 149,0-153,0 (146,0-156,0 0 bar 105,0-107,0 (102,5-109,5	)	<u>-</u>	-	-	

Checking values in brackets

 1 mm less control rod travel than col. 2 12.83

MAN 17,4 a 4

- 2 -

Test at n 500	revimin decreasing pres	ssure - in bar gauge pressure	
Pump. governor	Setting	Measurement	control red travel- difference
	Gauge pressure =	par Gauge pressure =	bar mm (1)
PE 10 PLS 846	1,0		13,1 - 13,2
+ RQVPA 677	1	. 0	10,4 - 10,5
+ RUVPA 0//	<b>:</b>	0,46	12,5 - 12,6
	,	0,23	11,0 - 11,4
:			
İ		:	
	: 		

Notes

(1) when n =

revimin and gauge pressure =

bar (= maximum full-load control rod travel)

WPP 001/4 MAN 17,4 a 3

1. Edition

PE 10 P 110 A 520/5 LS 846 Komb.-Nr. 0 401 849 180

RQV 250-1150 PA 673

supersedes company MAN

1-8-7-6-3-5-2-10-9-4

0-27-72-99-144-171-216-243-288-315° ± 0,50° (± 0.75°)

engine D 2540 MT 323 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rad travel	2 05-3 15) Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1150	11,9+0,1	14,0-14,2	0,4(0,8)			
250	6,9-7,1	1,1-1,7	0,4(0,7)			
	<u> </u> 					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated	speed		Intermediate	rated sp	1	Lower rated	speed I	lo	Sliding s	leeve travel
Degree of deflection of control		Control red (1)	of control	ļ	Control rod travel	Degree of deflection of control		Control rod travel	rev/min	mm (1)
lever		rev/min (2	lever	rev/min	mm (4)	lever 7	rev/min 8	mm (3)	10	11
max.	1170	15,2-17,8	-	-	-	ca.12	100 250	min.8,5 6,9-7,1		2,0-2,5 6,5-6,7
ca.65	10,9 4,0 1450	1190-1200 1310-1340 0-1,0						460=2,0	1150	8,4
						(3a)				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-roa Test oil ten	d stop	Rotational-speed 2b limitation intermediate speed	Fuel deliv	ery characteristics 58 peed 5b	Starting die switchir	•	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1150	0,9 bar 140,0-142,0 (137,0-145,0		LDA 750 LDA 500	0,9 bar 134,0-138,0 (131,0-141,0 0 bar 115,0-118,0 (112,0-121,0	) 	145,0-175,0 (141,0-179,0		<u>-</u>

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.33

MAN 17,4 a 3

- 2

Pump-governor	Setting	Measurement	diminution Control rod travel: difference
	Gauge pressure =	bar Gauge pressure = bar	mm (1)
PE 10 PLS 84			11,9 - 12,0
+ RQVPA 673		0	11,1 - 11,2
T KQT Gro		0,38	11,7 - 11,8
		0,33	11,3 - 11,5
			i
	:		
	:		
	•	•	

Notes

(1) when n =

revimin and gauge pressure =

bar ( = maximum full-load control rod travel)

D13

WPP 001/4 MAN 20,9 q 1

1. Edition

PE 12 P 110 A 520/4 LS 848

ROV 250-1200 PA 668-4

Komb.-Nr. 0 401 840 094

company MAN

D 2842 ME 338 kW

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12 0-15-60-75-120-135-180-195-240-255-300-315°  $\pm 0.5$ °( $\pm 0.75$ °)

Schiff

All test specifications are valid for Bosch Fuel Injection Fump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery  cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1	2	3	4	2	3	
1200	11,9+0,	12,5-12,7	0,4(0,8)			
250	7,0-7,	0,9-1,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper rated s	peed		Intermediate	e rated sp	eed	Lower rated	speed	1	Sliding s	leeve travel
deflection	rev/min Control rod travel mm	travel	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min	Control rod travel		mm
1	2	3	4	5	6	7	8	9	10	11
max.	1330	15,2-17	.8 -	-	-	ca.12				1,9-2,3 5,6-5,8
ca. 61	10,9 4,0 1500	1240-125 1365-139 0-1,0	95			425-550			1200	7,4
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten			Fuel deliv	ery characteristics 5a	Starting Idle switchin	. •	Torque- travei	Control fod travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	tea/wiu	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
1200	125,0-127,0 (122,0-130,0		-	-	100	150,0-170,0 (146,0-174,0	-	أفي 😓
					250	9,0-15,0 (6,5-17,5)		
						•		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MAN 17,4 b 6

1. Edition

PE 10 P 110 A 520/5 LS 850 Komb.-Nr. 0 401 849 173

RQ 900 PA 663-2

supersedes MAN company

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4 0-27-72-99-144-171-216-243-288-315°  $\pm 0.5$ °( $\pm 0.75$ °)

D 2540 MTE 274 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC) 7v1 10: RW=9.0-12.0 mm

Off closing at presi	lroke	(2,30-3,15)		Zy1. 10,	KH-3,0-12,0	1411
Rotational speed rev/min	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,1+0,	1 15,3-15,6	0,4(0,7	)		
250	6,9-7,	1 1,1-1,6	0,45(0,7	75)	;   	

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

PRG chei	Control rod	Full-load s Setting po			cifications (4)	Idle spec	-	Test spe	crifications 5	Torque o	Control rod
rev/min	travel mm 2	rev/min	mm 4	mm 5	rev/min 6	rev/min 7	mm 8	rev/min		rev/min 11	mm 12
-	-	-	-		900-905 932-946 0-1,0	-	-	-	-	-	

Torque-control travel on flyweight assembly dimension a

900-905 min<sup>-1</sup>

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor o Test oil ten	elivery on ontrol lever np. 40°C (104°F)	Control rod stop 3a	Fuel delivi	ery characteristics	<b>3</b> b	Starting h	Contra
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	1	; cm <sup>3</sup> /-1000 strokes 15		rev/min	cm <sup>3</sup> /1000 strokes / mm 7
850	153,0-156,0 (150,5-158,5)	-	-	-		-	-

Checking values in brackets

WPP 001/4 MAN 17,4 b 4

1. Edition

PE 10 P 110 A 520/4 LS 850 Komb.-Nr. 0 401 849 176

ROV 250-1150 PA 668-5

supersedes companyMAN engine D 2540 MTE

323 kW

1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315° ±0,5°(±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

mm (from BDC) Port closing at prestroke Spring pre-tensioning (torque-control valve) Control rod Fuel delivery Difference Fuel delivery Rotational speed Control rod  $cm^{3}$ cm<sup>3</sup>/100 strokes mm 100 strokes cm<sup>3</sup>/100 strokes rev/min

0,4(0,8) 14,1-14,3 1150 11,9+0,1 0.4(0.7)1,1-1,7 250 6.9 - 7.1

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed			Intermediale	1	<b>1</b>	Lower rated	sp <del>ee</del> d		Sliding s	ieeve travel
deflection	rev/min Control rod travel mm	(Favel		Degree of deflection of control lever	rev/min	control rod travel mm 4	Degree of deflection of control lever	revimin 8	control rod travel mm 3	rev/min	mm 11
max.	1160	15,2-17	,8	-	-	-	ca.12	1	min.8,5		2,0 <b>-</b> 2,5 6,8 <b>-</b> 6,9
ca. 65		1190-120 1310-134 0-1,0	0						365=2,0	1150	8,4
							(3a)				

Torque control travel a =

#### C. Settings for Fuel injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed 2b limitation intermediate speed	Fuel deliv	peed (5b)	Starting Idle switchir	ng point	travel	Control (5) Control roc travel
rev/min	cm <sup>3</sup> /1000 strokes	rev/min 4a)	rev/min	cm <sup>3</sup> /1000 strokes	tev/min	cm <sup>3</sup> /1000 strokes	tea/min	
1	2	3	4	5	6	7	8	9
1150	141,0-143,0 (138,0-146,0)		-	-		-	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MAN 17,4 b 5 1. Edition

En

PE 10 P 120 A 520/S LS 850

ROV 250-1150 PA 668-6

1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315° ± 0.5° (± 0.75°) Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

All rest specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

compaMAN

engine D 2540 MLE 405 kW

Komb.-Nr. 0401849177

A. Fuel Injection Pump Settings

Port closing at pres	troke	(2,95-3,15)	mm (from BDC)		·	
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,2+0,1	18,5-18,8	0,5 (0,9)			
250	6,2-6,4	1,2-1,8	0,8 (1,2)			
ļ	!	1				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

festoilis0 4113

Upper rated s	peed			Intermediate	rated spe	ed		Lower rated	speed	1	Sliding s	leave travel
	rev/min Control	Control rod (		Degree of deflection		Control ro	d	Degree of deflection		Control rod travel		
	rod travel	mm rev/min	~ \ \ \	of control lever	rev/min	mm	4	of control lever	rev/min	mm ③	rev/min	mm
7	2	3		4	5	6		7	8	9	10	11
max.	1230	15,2-17	,8	-	-	-		ca. 11	100 250	min.7,8 6,2-6,4	350 750	2,0-2,5 5,2-5,6
ca. 59	10,2 4,0 1400	1190-120 1260-120 0 - 1,0	90						380-4			7,5-7,9 8,8
								(3a)				

Torque control travel a =

mn

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ten		Rotational-speed (2) irrnitation intermediate speed	Fuel delin	very characteristics 58	Starting Idle switchir	. •	Torque- travel	Control rod
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	rev/min	cm <sup>3</sup> /1000 strokes	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
,	2	3	4	5	6	7	8	9
LDA 1150	1,0 bar 185,0-188,0 (182,0-191,0		500	0 bar 119,0-122,0 (116,0-125,0)		205,0-225,0 (201,0-229,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col 2 12.83

Testatn	500	ev min increasing pres	ssure - in bar gauge pressure		. <u>-</u>
Pump, governo	r	Setting	Measurement	diminution Control rod travel- difference	
		Gauge pressure	bar - Gauge pressure =	bar mm (1)	
PE10P +RQV	LS 850 PA 668-6	1,0	0 0,65 0,54	11,2-11,3 9,6-9,7 10,8-10,9 10,0-10,3	
			:		
		;	:		
		:	:	·	

Notes

(1) when n =

revimin and gauge pressure =

bar (= maximum full-load control rod travei)

## **Test Specifications** Fuel Injection Pumps (WPP 001/4 MAN 17,4 b 7 and Governors

1. Edition

PE 10 P 110 A 520/5 LS 850 Komb.-Nr. 0 401 849 178

ROV 250-1150 PA 670-1

supersedes\_

company MAN

D 2540 MTE engine 323 kW

1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315°  $\stackrel{+}{=}$  0,5° ( $\stackrel{+}{=}$  0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

leavel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
11,9+0,1	14,0 - 14,3	0,4 (0,75)			
7,0-7,2	1,1 - 1,6	0,45(0,75			
2	1,9+0,1	1,9+0,1 14,0 - 14,3	cm <sup>3</sup> /100 strokes 100 strokes 4 1,9+0,1 14,0 - 14,3 0,4 (0,75)	cm <sup>3</sup> /100 strokes 100 strokes 4 2 1,9+0,1 14,0 - 14,3 0,4 (0,75	1,9+0,1 14,0 - 14,3 0,4 (0,75 mm 2 mm 2 mm 2 mm 2 mm 2 mm 2 mm 2 mm

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed		Sliding s	leeve travel
deflection of control	rev/min Control rod travel mm	Control rod travel mm rev/min	(1a) (2a)	Degree of deflection of control lever	rev/min	Control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min	mm 11
	1170	15,2-17		-	-	_	ca. 12	1	min.8,6		2,0-2,5 6,8-6,9
ca. 65	10,9 4,0 1450		340						460 = 2,0		
							(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load di Controi-roo Test oil ten		Rotational-speed 2b iimitation intermediate speed	Fuel deliv	pery characteristics 58 peed 50	Starting Idle switchir	. •	Torque-	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	trave) mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 140,0-143,0 (137,5-145,5)	1190-1200 *	LDA 500	0 bar 115,0-117,0 (112,5-119,5)	-	-	•	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83

Testoitis0 4113

MAN 17,4 b 7 - 2 -

Pumpigavernor	Setting	Measurement	giminution Control rod travel: gitterence
	Gauge pressure :	par Gauge pressure :	bar mm (1)
PE 10 P LS 850 + RQV PA 670-1	0,7	0 0,38 0,34	11,9-12,0 11,0-11,1 11,6-11,7 11,2-11,4

Notes

(1) when n =

revimin and gauge pressure =

parit = maximum tuil-load control rod traveii

WPP 001/4 IHC 13,4 e

1. Edition

En

PES 6 P 110 A 420 LS 3037

EP/RSV 350-1050 P2/425 DR

Values only apply to test nozzle-and-holder assembly 1 688 901 016 and fuel-injection test tubing 9 681 271 027

company IHC DTI-817 C Komb.-Nr. 0 402 076 710

All fest specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings 2,0 - 2,1

Suction-gallery pressure 2,8 bar

estortiso 4113

(1.95-2.15)

mm strom BDC.

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Figer derivery	Spring pre-tensioning torque-control valves
rev:min	mm 2	cm·/100 strokes	100 strokes	mm 2	cm 100 strokes	mm ö
1050	11,3+0,1	19,9-20,1	0,4			
350	4,6-4,7	2,0-2,5				

\*\* With control lever in end position: increase speed until 4 mm control-rod travel is reached. Then adjust idle spring so that it maskes contact and screw out by one turn.

Adjust the fuel delivery from each outlet according to the values in  $\Box$ 

#### **B. Governor Settings**

Degree of	er rated speed	revimin  Control rod	Interm	ediate rat	ed speed	Control	>w∙	Control rod	3 10	rque control   Control rod   travel
deflection of control lever	travel mm	mm rev/min		5	6	rever deflection in degrees ?	revimin	mm 9	revimin	mm 11
lose .	800	0,3-1,0	-	_	-			**	1050	11,3-11,4
						ca. 21	100 200	20,0-21,0		12,1-12,3
ca.45	10,3 4,0 1300	1090-1100 1145-1175 0,3 - 1,7					350 390-420	4,6		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	introad stop emp. 40 C (104 F)	6 Aotational- speed limitat		en denvery paracteristics	Starting to	iuer perivery 5	4a) °	e stop  Control rod
rev-min	cm: 1000 strakes	changed to revimin	rev.min	cm 1000 strokes	ev min	om 1000 strokes	:evimin 8	travei mm 9
LDA 1050	0,8 bar 199,0-201,0 197,0-203,0)	1090-1100*	LDA 750 LDA 800	0,8 bar 202,0-208,0 (199,0-211,0) 0 bar 145,0-153,0 (142,0-156,0)	100 350	180,0-205,0	1	

Checking values in brackets

1 mm less control rod travel than col. 2

5.83

IHC 13,4 e

- 2 -

revimin decreasing pressure - in par gauge pressure Test at ni-800 aiminution Setting Measurement Pump gavernor Control rod travelaifference par mm (1) Gauge pressure = bar Gauge pressure = Suction control-rod travel + 0,5 mm 0,19 - 0,25PES6P..LS3037 EP/RSV..P2/425DR 0,49 - 0,52 10,8 - 10,9

Notes

(1) when n =

revimin and gauge pressure -

par i = maximum full-load control rod travel)

WPP 001/4 VOL 12,0 f1 2. Edition

PE 6 P 120 A 320 RS 3071

ROV 250-1025 PA 371

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

supersedes 2.81 company Volvo engine TD 120 GA

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

	Control rod travel mm	Fuel delivery  cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	<b>20,5-20,</b> 8	0,5(0,9)			1
250	5,6-5,7	2,2-2,6	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s			Intermediate	rated SD	eed Control rod	Lower rates	t sp <del>ee</del> d !	Control rod	Sliding s	leeve travel
deflection	Control	Control rod ta	Degree of deflection of control		travel	deflection of control		travel		
	rod travel	rev/min (28		revimin S	mm (	lever 7	revimin 8	9	revimin 10	* 1
max.		15,2-17,8	-	-	-	ca.12	100	min.7,1	250	1,1-1,2
ca.40	_	1065-1075	. 1			1	250	5,6-5,7		2,9-3,3
		1145-1175							1025	7,2
Ì	1300	0 - 1,0				(3a)				

Torque controi travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil terr		Rotational-speed 20 limitation intermediate speed	Fuel delivingh idle s	rery characteristics(50)	Sterting title switchir		Torque- travel	Control Control roc
rev/min		rev/min 40	rev/min 4	cm <sup>3</sup> /1000 strokes	rev/min	cm#1000 strokes	revimin B	mm 9
LDA 700	0,9 bar 205,0-208,0 (202,0-211,0	1065-1075*	LDA 700	0 bar 157,0-161,0 (154,0-164,0)	100	230,0-270,0 =RW 20,0- 21,0 mm	-	-

Checking values in prackets

\* 1 mm less control rad travel then col 2

restoil-ISO 4113

np governor	Setting	Measurement	giminution Control rod travel- difference		
	Gauge pressure	par Gauge pressure	bar mm 1:		
E 6 PRS 3071 ROV PA 371	0,57	0,90 0 0,33	11,0-11,1 11,4-11,5 9,0-9,1 9,9-10,1		

votes

(1) when n

revimin and gauge pressure =

par 🕾 maximum full-load control rod travel)

31.4

Εn

WPP 001/4 VOL 10,0 o3
2. Edition

PE 6 P 110 A 320 RS 3080-1

RQV 250-1025 PA 589

Komb.-Nr. 0 401 846 768

supersedes 12.82
company Volvo
engine TD 100 FA
220 kW (299 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

3,0 - 3,1 2 45-3 15 mm (from BDC)= RW 9.0 - 12.0 mm Port closing at prestroke Spring pre-tensioning (torque-control valve) Difference Control rod Fuel delivery Control rod **Fuel delivery** Rotational speed cm3/100 strokes 100 strokes rev/min cm<sup>3</sup>/100 strokes mm mm 2,5 ± 0,1 (2,2 = 2,9) 0.4(0.8)17,9 - 18,113,2+0,1 700 0.3(0.6)1,7 - 2,1250 4,3-4,5

Adjust the fuel delivery from each outlet according to the values in

**B. Governor Settings** 

Testoil-ISO 4113

Upper rated s	peed			Intermediate	rated spe	eed	Lower rated	speed	· ·	Sliding s	leeve travel
	rev/min Control	Control rod travol	<b>(1a)</b>	Degree of deflection		Control rod travel	Degree of deflection		Control rod travet		
of control lever	rod travel mm	mm rev/min	(2a)	of control lever	rev/min	тт.	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	_	4	5	6	7	8	9	10	11
max.	1090	15,2-17	7,8	-	-	-	ca. 9		min.5,8		0,7-0,9 3,9-4,5
ca. 64	12,2	1085-10						ŀ	4,3-4,5	660	
<u> </u>	1300	1160-1						315-3	375 = 2,0	bis 945	6,4-6,6
							(3a)			1025	7,6

Torque control travel a =

mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rot Test oil ten		Imitation intermediate speed	Fuel delivingh idle s	rery characteristics 58 peed 50 cm <sup>3</sup> /1000 strokes	Starting idle switchin	ig point	Torque- travel	Control 5  Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 700	0,75 bar 179,0-181,0 (176,0-184,0)	1085-1095*	LDA 1000 LDA 700	0,75 bar 170,0-174,0 (167,0-177,0 0 bar 130,5-133,5 (128,0-136,0		150,0-200,0 (146,0-204,0 = 20,0-21,0 mm RW		-

Checking values in brackets

\*1 mm less control rod travel than col 2

12.83

BOSCH

VOL 10,0 03

- 2 -

Pump/governor	rev/min decreasing pressure	Measurement	Control rod travel- difference
	Gauge pressure =	bar Gauge pressure =	bar mm (1)
PE6P RS 3080-1	0,42		12,5 - 12,6
+ RQV PA 589	1	0,75	13,2 - 13,3
		. 0	10,5 - 10,6
	1	0,26	11,4 - 11,6
	; ;	!	
		:	i
	·	;	

Notes

(1) when n =

rev/min and gauge pressure = bar (= maximum full-load control rod travel)

1

Testoil-ISO 4113

## Test Specifications Fuel Injection Pumps 1 and Governors

WPP 001/4 VOL 10,0 o2 3. Edition

En

PE 6 P 110 A 320 RS 3080-1

ROV 250-1100 PA 589

Komb.-Nr. 0 401 846 769

supersedes 8.83 company. Volvo

engine TD 100 F

220 kW (299 PS)

All test apecifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at pres	stroke	3,0 - 3,1 (2,05_3_15)	mm (from BDC)	mm (from BDC) = RW 9.0 - 12.0 mm						
Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)				
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6				
700	12,7+0,	17,9 - 18,1	0,4(0,8)			2,5 <u>+</u> 0,1				
250	3,8-4,0	1,7 - 2,1	0,3(0,6)			(2,2 - 2,9)				
	1									

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	eed .	Lower rated	speed	1	Sliding s	leeve travel
	rev/min	Control rod (19)	Degree of deflection		Control rod	Degree of defrection		Control rod travel		· ①
of control	rod travel		of control lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1180	15,2-17,8	-	-	-	ca. 8	100	min. 5,3	200	0,7-0,9
ca. 63	11,7	1160-1170	1			ļ	250	3,8-4,0	500	4,2-4,8
	4,0	1235-1265					305-3	65 = 2,0	600 bis	6,4-6,6
	1350	û - 1,û				(3a)			1040 1100	7,6

Torque control travel a =

шш

## C. Settings for Fuel Injection with Fitted Governor

Full-load de Control-ros Test oil ten		Rotational-speed (22 Imitation intermediate speed	Fuel a man	Starting fuel delivery idle switching point		. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min 8	travel mm
LDA 700	0,75 bar 179,0-181,0 (176,0-184,0)	1160-1170*	LDA 1000 LDA 700	0,75 bar 170,0-174,0 (167,0-177,0) 0 bar 130,5-133,5 (127,5-136,5)		150,0-200,0 = 20,0-21,0 mm RW	1	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

12.83



VOL 10,0 o 2 - 2 -

o <sub>ump/governor</sub>	Setting	Measurement	Control rod travel-
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P RS 3080-1	0,42		12,0 - 12,1
+ RQV PA 589	:	0,75	12,7 - 12,8
		<b>0</b>	9,9 - 10,0
		0,26	10,8 - 11,0
		1	· · · · · · · · · · · · · · · · · · ·
	<u> </u>	<b>:</b>	
			İ

Notes.

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

**Festoil-ISO 4113** 

WPP 001/4 MB 14,6 a 4. Edition

PE 8 P 110 A320 LS 3802

RQ 300/i150 PA 437 (1) ROV 300-1150 PA 486 (2) supersedes 80 company Daimler-Benz

OM 422 206 Kw (280 Ps)

Komb.-Nr. 0 401 848 708 (1) 0 401 848 712 (2)

-7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ \pm 0}, 5^{\circ}$  ( $\pm 0, 75^{\circ}$ )

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

mm (from BDC)

Zy1.8

Rotational speed	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
<b>1150</b> 300 600	12,7-12, 8,5-8,7		0,4(0,8) 0,4(0,7) 0,6(1,0)			
				E		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

RQ - 437

PRG ched		Full-load s Setting po		_	rev/min	Idle spec	Control   Control   rod (ravel		cifications 5 Control rod travel	rev/min	Control rod travel
600	13,8-14,6	600	14,0	ļ	1195-1210		8,6	300	min.10,1 8,5-8,7	1025	12,7-12,8
1400	0 - 1,0					: 		420-	470=2,0	600	13,0-13,1

Torque-control travel on flyweight assembly dimension a = 0,2

Speed regulation: At

1 mm less control

## C. Settings for Fuel Injection Pump with Fitted Governor

governor co		Control rod stop 3a	Fuel delive	ery characteristics 3b	idle spee	d Control inditravel
1	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min 4	cm <sup>3</sup> /~1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes/ mm
1150	121,0 - 123,0 (118,0 - 126,0)	600	600	117,0 - 121,0 (114,0 - 124,0)	100	130,0-150,0

Checking values in brackets

Upper rated	speed			intermediate	e rated spe	eed	Lower rate	d speed		Sliding	sieeve travei
Degree of deflection of control	rev.min Control roatravel		(a)	Degree of deflection of control		Control rod travel	Degree of deflection of control		Control rod travel	`	1
lever	mm	rev/min	(2a)	lever	rev/min	mm 4	lever	rev/min	mm (3	) revimin	mm.
1	_ 2	3		. 4	5	6	j7	8	9	10	11
ca.68	1150 1400	15,2-1 0 - 1	7,8	: ! !			ca.21	100 300	min.10, 8,5-8,7		1,7 3,0-3,3
ca.66		1190-12 1245-12		- · · · · · · · · · · · · · · · · · · ·	:			735	795=2,0	1200	8,4
	i 1						(3a)			<u>,</u>	

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro	d stop	limitation	Fuel deli-	very characteristics (5a) speed (5b)	Starting die switching	fuel delivery 6	Torque- travel	control 5
rev/min	np 40°C (104°F) (2) , cm²/1000 strokes	revimin 4a	rey/min	cm <sup>3</sup> /1000 strokes	revimin 6		revimin 8	Control rod travel mm
1150	121,0-123,0 (118,0-126,0)		600	117, 0-121, 0 (114, 0-124, 0)	100	130, 0-150, 0	900	12,7-12, 12,7-12, 12,8-13,
		:			100-2	220 (80-240)		dina a

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Upper rated s	peed			Intermediate	rated spe	ed	Lower rate	d speed		Shaina s	eeve travel
	rev/min Control		Та	Degree of deflection	!	Control rod travel	Degree of deflection	:	Control rod travel	•	0
of control	rod travel	rev/min	(2a)	of contro- lever	rev/min	mm 4	of control lever	rev/min	mm 3	rev/min	mm
1,	2	3		4	5	6	7	88	9	10	1.1
								!			
							(3a)				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load of	d stop	Rotational-speed 2b	Fuel deli high idle	very characteristics 5a speed (5b)	· iule		6 travel 5		
	mp 40°C (104°F) (2)	) intermediate speed  4a	)		rev/min	ng point	rev/min	Control rod travel	
rev/min	cm <sup>3</sup> /1000 strokes	rev/min	[rev/min	cm <sup>3</sup> /1000 strokes	1	!			
1	2	.3	• 4	5	:6	7	8 1	9	
	1	;		:	!				
	į		:	į	i	1			
			!	i	i	į.			
		:		į	:				
		:	1		:				
	•	1	1		i	i			
		İ	:			i			
	:	:	:		i				
					<u> </u>				

Checking values in brackets

\* 1 mm less control rod travel than col 2

WPP 001/4 MB 21,9 b 1 2. Edition

PE 12 P 120 A 320 LS 3819-2 POV 350-1050 PA 493

1-5-9-8-3-4-11-10-2-6-7-120-15-60-75-120-135-180-195-240-255-300-315° -0.5 (-0.75) engine 357 kW (485 PS)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067.
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersectes 83
Daimler-Benz
compact 424 A
engine 357 kW (485 Ps

Komb.-Mr. 0 401 840 711

## A. Fuel Injection Pump Settings

Port closing at prestroke (3.95-4.15) mm (from BDC) 7y1. 12

Rotational speed rev/min	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Difference cm <sup>3</sup> / 100 strokes	Control rod trave! mm 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,2+0,	15,1-15,3	0,5(0,8)			
350	4,6-4,	8 1,2-1,8	0,8(1,2)			
				1		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated sp	l .				Sliding sleeve travel	
deflection of control	rev/min Control rod travel mm	Control rod travel mm rev/min 28	Degree of deflection of control lever	rev/min 5	control rod travel mm 4	Degree of deflection of control lever	rev/min 8	Control rod travel mm 3	rev/min 10	mm
max.		15.2-17.8	-	-	-	ca.10	100 350	min.6,2 4,6-4,8		0,9-1,1 3,4-3,6
ca. 56	9,2	1085-1095 1165-1195	•					, ,	800 1050	4,7-4,9 6,8
	4,0 1350					360-500				
						(3a)				

Torque control travel a =

mm

### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil tem	ston	Rotational-speed (2b) limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting Idle switchir		Torque- travel	Control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min 8	mm 9
LDA 1050	0,6 bar 151,0-153,0 (148,0-156,0)	1080-1090*	LDA 1050 ** LDA 500	0,6 bar 120,0-123,0 (117,0-126,0 0 bar 128,0-130,0 (125,0-133,0		140,0-160,0 (136,0-164,0	) <sup>-</sup>	-

Checking values in brackets

Set at the reduced-delivery stop.

\* 1 mm less control rod travel than col 2

10.83

BOSCH

MB 21,9 b 1 - 2

Testatin =

500

rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure =	bar mm (1)
PE 12 PLS3819-2 +ROVPA 493	0,28	0,60 0	9,9-10,0 10,2-10,3 9,5-9,6
		0,24	9,6-9,8
			1
			•

Notes

(1) when n =

rev/min and gauge pressure =

bar (= maximum full-load control rod travel)

Testoil-ISO 4113

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 59,2 a

2. Edition

PE 6 ZW 140/400 RS 27/2, 53/2 PE 6 ZW 140/410/3 RS 28/2, 54/2

RQUV 300-750 ZW 31

1 - 5 - 3 - 6 - 2 - 4 je  $60^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Replaces 2.83 MTU

MMB 820

VDT-W-400/305 Please note instructions on sheet 2

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke 2,0-2,1

mm (from BDQ)y1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min- i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
600	18,0	491,0-501,0	15,0 (22,0)	487,0-505,0	
600	4,0	70,0-90,0	10,0 (15,0)	67,0-93,0	
250	4,0	23,0-43,0	8,0 (12,0)	20,0-46,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min '	Control- rod travel mm min :	Medium ra Control lever flection degrees 4	min 5	Control- rod travel mm	Lower rat Control lever de- flection degrees 7	mın- '	Control- rod travel mm 9	min '	Control- rod travel mm 11
ca. 85	750 775 800 840 865	13,0-18,0 5,0-12,0 0-3,0	1		-	ca. 19	270 300 325 350 400 540	11,0-13, 7,6-8,0 5,0-6,2 4,8 3,3-4,3		-

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever		Control rod stop at speed	Fuel-de charact	livery eristics I	Starting fuel delivery		
(Test o	cm <sup>3</sup> /1000 strokes	min .	min · 1 4	cm³/1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
750	21 mm RW	-	-	-	-	-	
,							
				<u> </u>		11.	

Checking values in brackets

11.83

#### Pump

With these pumps the customer also requests that the stop and full load limits of the control-rod projection be stamped on the pump housing at contol-rod travel 0 mm.

These dimensions, which must be stamped in, can be calculated as follows:

Mark control-rod travel 18 mm (setting point of the pump) with insertion device. Calculate the projection of the control rod front end on pump side 2. Deduct 18 mm from the dimension calculated. Calculate the projection of the control rod with forked piece fitted on pump side 1. Add 18 mm to this dimension. Stamp these dimensions on the front of the pump housing above the spring chamber cover (with plunger-and-barrel assembly 1 the dimension of pump side 1 and with plunger-and-barrel assembly 6 that of pump side 2). Size of figures approx. 5 - 6 mm.

After the insertion device has been removed the 0-dimension calculated on pump side 2 must be reached or not reached in the stop position of the control rod.

On pumps with governor ascertain only the dimension on the drive end and stamp this on the housing.

#### Governor

The lower idle spring must be positioned between its spring seats, and if necessary also the middle spring must be positioned under the outer spring seat, so that the governor specifications are reached.

estoil ISO 411

## Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 a 1

1. Edition

PE 6 ZW 150/120 RS 70/11

RQU 250-350/1000 ZWA 46 DR

Replaces

Komb.-Nr. 0 402 436 033

Engine MB 6 V 331

1-2-3-4-5-6 0-45-120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a	t prestroke	2,50-2,60 (2,45-2,65)	mm (from BDC)		Spring pre-tension
Rotational	Control-	Fuel delivery	Difference	Fuel delivery	(torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min .	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	Λ.
600	9,0	125,0-145,0	16,0 (24,0)	120,0-156,0	-
300	9,0	37,0-57,0	10,0 (15,0)	33,0-61,0	
1100		C Sp. 2	İ		
350		C Sp. 5	12,0		
	ł				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	Control- rod travel mm min : 3	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	mın 10	e control Control- rod travel mm 11
ca.58	 18,0 17,5-18,0 11,7-16,0 3,0-10,0 0-1,0	ca.27		14,1-16,4 10,2-11,8 7,4-7,6 2,0-2,7 2,0 1,8-2,0		150 220 250 400 520	11,1-13,2 8,0-8,7 7,6-7,8 2,7-4,5 0	-	•

Torque control travel a =

Speed regulation. At 1130-1140 min less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	id delivery ernor control lever il temperature 40°)	at speed		Fuel-delivery characteristics		Starting fuel delivery		
min 1	cm=/1000 strokes	min · · · 3	mın 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>2</sup> /1000 strokes 7		
1100	279,0-285,0 (276,0-288,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5) Shutoff solenoid 0,5 - 1,5 mm in front of stop		

Checking values in brackets

11.83

**Cestoil-150 4113** 

#### Test specifications Fuel injection pumps and governors En.

... יווי של 19,9 a טווי של 19,9 a

Edition

PE 6 ZW 150/120 RS 70/11 Z

RQU 250-350/1100 ZWA 43 DR

Replaces Firm

Komb.-Nr. 0 402 436 032

MIU Engine i/IB o V 331

1-2-3-4-5-6

0-45-120-165-240-285° ± 0,5° (± 0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings 2,50-2,60
Port closing at prestroke (2,45-2,65) mm mm (from BD)Q)1 6

Port closing a		(2,45-2,05)	Difference	Fuel delivery	Spring pre-tension
Rotational	Control- rod travel	Fuel delivery  Average value	in fuel delivery	Checking values	(torque-control valve)
min '	mm 2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600 300	9,0 9,0	125,0-145,0 37,0-57,0	16,0 (24,0) 10,0 (15,0)	120,0-150,0 33,0-61,0	
1100 350		C Sp. 2 C Sp. 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	Control- rod travel mm min '	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control- Control- rod travel mm
ca.58	18,0 17,5-18,0 11,7-16,0 3,0-10,0 0-1,0	ca.27		14,1-16,1 10,4-12,5 7,4-7,6 2,0-2,7 2,0 1,8-2,0		150 220 250 400 520	1,0-14,2 8,0-8,6 7,6-7,8 2,6-4,3	-	-

Torque control travel a =

Speed regulation: At 1130-1140 milmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)		Control rod stop at speed  Fuel-delivery characteristics			Starting fuel delivery	
min	cm <sup>3</sup> /1000 strokes	min 3	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>2</sup> /1000 strokes 7
1100	318,0-324,0 (315,0-327,0)	-	350	42,0-48,0		17,8-18,2 mm RW (17,5-18,5) Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 g

1. Edition

PE 8 ZW 150/120 RS 74/11 RQU 250-350/1100 ZWA 46 DR

Replaces Firm MTU

Komb. Nr. 0 402 438 011

Engine MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60(2,45-2,65) rom BDZy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min - '	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	-	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	(0,0(15,0)	33,0-61,0)	
1100 350		C Sp 2 C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min 2	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min '	ed  Control-  rod  travel  mm  6	Lower rat Control lever de- flection degrees 7	ed speed min 8	Control- rod travel mm		e control Control- rod travel mm
ca.58	650 1100 1150 1200 1280	18,0 17,5-18,0 11,7-16,0 3,0-10,0 0 - 1,0	ca.27	150 220 350 500 650 1000	14,1-16,4 10,2-11,8 7,4-7,6 2,0-2,7 2,0 1,8 <sub>0</sub> 2,0	1	150 220 250 400 520	11,1-13,2 8,0-8,7 7,6-7,8 2,7-4,5	_	-

Speed regulation: At 1130-1140 minimi less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever i temperature 40°)	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min 1	cm <sup>3</sup> /1000 strokes	min 3	min '	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7	
1100	279,0-285,0 (276,0-288,0)	-	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5)	
•						Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

WPP 001/4 MTU 26,5 g 1

1. Edition

PE 8 7W 150/120 RS 74/11 Z

RQU 250-350/1100 ZWA 43DR

Replaces

Checking values

cm3/1000 strokes

494,0-510,0

120,0-150,0

33,0-61,0

Firm MTU Engine

Komb.-Nr. 0 402 438 010

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \div 0,5^{\circ} (\div 0,75^{\circ})$ 

Fuel delivery

Average value

cm3/1000 strokes

497,0-507,0

125,0-145,0

37,0-57,0

C Sp. 2

C Sp. 5

MB 8 V 331

Note VDT-W-400/305

Rotational

1000

600

300

1100

350

speed

min 1

Testoil SO

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

(2,45-2,65)Port closing at prestroke

Control-

mm

rod travel

18,0

9.0

9,0

mm (from BDZV). Fuel delivery

Difference

in fuel delivery

cm<sup>3</sup>/1000 strokes

15,0 (22,0)

15,0 (24,0)

10,0 (15,0)

12,0

Spring pre-tension (torque-control valve)	
-	

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min	Control- rod travel mm min :	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	min 10	e controi Controi- rod travel mm
ca.58		18,0 17,5-18,0 11,7-16,0 3,0-10,0 0-1,0	ca.27		14,1-16,4 10,4-12,5 7,4-7,6 2,0-2,7 2,0 1,8-2,0		150 220 250 400 520	11,0-14,2 8,0-8,6 7,6-7,8 2,6-4,3 0	-	-

Torque control travel a =

Speed regulation: At 1130-1140 min less control rod travel

# C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever il temperature 40°)	C. atrol rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery		
min 1	cm <sup>3</sup> /1000 strokes	min 3	min 1 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7		
1100	318,0-324,0 (315,0-327,0)	- ·	350	42,0-48,0	100	17,8-18,2 mm RW (17,5-18,5) Shutoff solenoid 0,5 - 1,5 mm in front of stop		

Checking values in brackets

WPP 001/4 MTU 19,9 C

1. Edition

Replaces

Firm. MTU

Engine MB 6 V 331

PE 6 ZW 150/120 RS 75/11 ROUV 375-1200 ZWA 45 R

Komb.-Nr. 0 402 436 035

Note VDT-W-400/305
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings
2,50-2,60(2,45-2,65)
Port closing at prestroke
Zy1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min <sup>-1</sup>	mm 2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
				1 .	
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0(15,0)	33,0-61,0	
1200 375		C Sp 2 C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min	Control- rod travel mm min <sup>-1</sup>	Medium ra Control lever flection degrees 4	min 5	Control- rod travel mm	Lower rat Control lever de- flection degrees 7	ed speed min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm
ca.85		17,7-21,4 11,5-16,8 3,5-11,5 0 - 5,6 0 - 2,0	-	-	-	ca.32	240 340 375 460 600 820	18,0-20,0 8,6- 9,7 7,9-8,1 3,5-5,6 1,6-4,3		-

Torque control travel a =

Speed regulation At 1230-1240 minmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	id delivery ernor control lever il temperature 40°)	Control rod stop at speed	Fuel-de charact		Startir delive	
ന്ന <b>്</b> 1	cm <sup>3</sup> /1000 strokes	min '	min 4	cm <sup>-</sup> /1000 strokes 5	min 6	cm·/1000 strokes 7
1200	279,0-285,0 (276,0-288,0)	-	375	42,0-48,0	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 h

1. Edition

Replaces

Engine MB 8 V 331

PE 8 ZW 150/120 RS 76/11 RQUV 300-775 ZW (A) 47 R

Komb.-Nr. 0 402 438 007

1-2-6-3-4-5-7-8 je 45°  $\pm 0.5^{\circ}$  ( $\pm 0.75^{\circ}$ )

Note VDT-W-400/305
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuol-injection-pump settings

Port closing at prestroke 2,50-2,60(2,45-2,65) from BDC)Zy1. 8

Rotational	Control-	Fuel delivery	Difference	Fue! delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min ''	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	om³/1000 strokes	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600 300	9,0 9,0	125,0-145,0 37,0-57,0	16,0(24,0) 10,0(15,0)	120,0-150,0 33,0-61,0	
775 300		C Sp 2 C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min <sup>-1</sup>	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ed spee min 8	d   Control-   rod   travel   mm   9	min 10	e control Control- rod travel mm
ca.82	800 900 775 800 820 875	18,0-21,5 0 11,6-14,8 5,1-11,1 0 - 8,0 0	-	90	-	ca.15	280 320 400 540	8,4-10,3 6,1-9,3 0,9-4,0 0	-	-

Torque control travel a ==

Speed regulation At 780-790 min 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	ernor control lever	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min	cm <sup>3</sup> /1000 strokes	min :	min 4	cm <sup>2</sup> /1000 strokes 5	min 6	cm³/1000 strokes 7	
775	279,0-285,0 (276,0-288,0)	-	300	50,0-55,0		Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

WPP 001/4 MTU 26,5 h1

1. Edition

PE 8 ZW 150/120 RS 76/11 RQUV 375-1200 ZWA 45 R

Replaces

Firm

Engine UB 8 V 331

Komb.-Nr. 0 402 438 003

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ}$  (+0.75°)

Note VDT-W-400/305
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke 2,50-2,60(2,45-2,65)(from BDC) Zy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension itorque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min 1	mm	cm³/1000 strokes	cm=/1000 strokes	cm <sup>-</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	125,0-145,0	16,0(24,0)	120,0-150,0	
300	9,0	37,0-57,0	10,0(15,0)	33,0-61,0	
200		C Sp 2			
375		C Sp 5	12,0		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min-: 2	Control- rod travel mm min :	Medium ra Control lever flection degrees 4	min :	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ed speed min 8	Control- rod travel mm 9	min 1	e control Control- rod travel mm
ca.85	1200 1250 1300 1350 1400	17,7-21,4 11,5-16,8 3,5-11,5 0 - 5,6 0 - 2,0	-	-	-	ca.32	240 340 375 460 600 820	18,0-20,0 8,6- 9,7 7,9- 8,1 3,5- 5,6 1,6- 4,3	1	-

Torque control travel a =

Speed regulation At/1230-1240 milimiliess control rod travel

## C. Settings for fuel-injection pump with fitted governor

	nor control lever	at speed	Fuel-delivery characteristics		Starting fuel delivery		
1	emperature 40°) cm <sup>3</sup> /1000 strokes 2	min ∵ 3	min 4	cm <sup>2/1</sup> 000 strokes 5	mւn 6	cm³/1000 strokes 7	
	279,0-285,0 (276,0-288,0)	-	375	42,0-48,0	_	Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets

Testoil-150 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 b 5. Edition

PE 6 ZW 150/120 RS 1001/11

RQUV 300-1200 ZWA 48 R

Replace 1.78 MTU

1 - 2 - 3 - 4 - 5 - 6  $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$ 

Engine MB 6 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

# A. Fuel-injection-pump settings

Port closing at prestroke (2 45-2 65)

mm (from BDZC)1\_6

Rotational	i ontrol-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min ·	mm	cm <sup>3</sup> /1000 strokes	cm <sup>2</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min- 3	Medium ra Control lever flection degrees 4	ted spec	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min: 1  8	Control- rod travel mm 9	min - 10	e control Control- rod travel mm
ca. 85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0	ca. 30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a =

Speed regulation At 1230-1240 mismin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	id delivery ernor control lever il temperature 40°)	Control at speed	rod stop	Fuel-de charac	eliver teristics	Starti	ng fuel Pry
ការក ' 1	cm <sup>3</sup> /1000 strokes	min 3	Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>2</sup> /1000 strokes 7
1200	18 mm RW		00 ,0 mm RW		-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

WPP 001/4 MTU 26,5 c

1. Edition

Replaces

Firm

PE 8 ZW150/120 RS 1002/11 RQUV 300-1200 ZWA 48 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Engine MB 8 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Testoil-150 411

mm (from BDQJy1. 8 Port closing at prestroke (2.45-2.65)

Port closing at	prestroke (2	,45-2,65)		Fuel delivery	Spring pre-tension
Rotational	Control-	Fuel delivery	Difference	Fuel Genvery	(torque-control
speed	rod trave!	Average value	in fuel delivery	Checking values	valve'
min-'	mm	cm³/1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9 0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated Control lever deflection degrees	mm min:	Control- rod travel mm min	Medium rai Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min '	e control Control rod travel mm 11
ca.85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0	ca. 30	250 375 500 600 730	12,2-14, 6,0-7,2 2,6-3,7 0,8-2,1		150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	_	-

Torque cont: 01 travel a =

Speed regulation At 1230-1240 mimmiless control rod travel

# C. Settings for fuel-injection pump with fitted governor

OR GOVE	d delivery ernos control lever I temperature 40°)	Control rod at speed	stop	Fuel-de charact		Startin	
min :	cm³/1000 strokes	min 3	Idle:	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW	300 = 8,0	mm RW	-		-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 19,9 d

1. Edition

PE 6 ZW 150/120 RS 1007/11 RQU 250-350

RQU 250-350/1100 ZWA 43 DR

Replaces
Firm MT

1 - 2 - 3 - 4 - 5 - 6 $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$  Engine MB 6 7 331

Note VDT-W-400/305 Governor adjustement according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

2,50-2,60

mm (from BDZ)1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min <sup>-1</sup>	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees		Control- rod travel mm min-1	Medium ra Control lever flection degrees 4	min 1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7		Control- rod travel mm		e control   Control-   rod   travel   mm
ca. 58	650 1100 1150 1200 1230	13,7-16,0 3,0-10,0	ca. 27	100 350 650 1000 1150	14,5-17,5 7,6-8,2 1,8-2,4 1,8-2,4 0	ca.21	150 250 400 530	9,5-11,8 7,7-8,2 2,2-4,5 0	-	

Torque control travel a =

mm

Speed regulation: At .1130-1140 mimmeless control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever (Test oil temperature 40°)	Control rod stop at speed			Starting fuel delivery		
min <sup>-1</sup> cm <sup>3</sup> /1000 strokes	min: Leerlauf	min · 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>2</sup> /1000 strokes 7	
1100 18 mm RW	300 = 8,0 mm RW	1	-	100	Shutoff solenoid 0,5 - 1,5 mm in front of stop	

Checking values in brackets , . . .

WPP 001/4 MTU 19,9 c1

1. Edition

PE 6 ZW 150/120 RS 1007/11

Replaces RQU 250-400/1100 ZWA 49 R

Engine

1 - 2 - 3 - 4 - 5 - 6  $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$ 

MB 6 V 331

Note VDT-W-400/305 Governor adjustement according to VDT-I-420/112 All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65)

mm (from BD Zyl. 6

Port closing at	prestroke (2	,45-2,65)	In wasses	Fuel delivery	Spring pre-tension
Rotational	Control-	Fuel delivery	Difference		(torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	
1	2	3	4	3	
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	
ł					

Adjust the fuel delivery from each outlet according to the values in [

## **B.** Governor settings

oper rated speed ontrol ver effection egrees min	Control- rod travel mm min '	Medium ra Control lever flection degrees	min	Control-	Lower rate Control lever de- flection degrees 7		Control- rod travel mm 9		e control Control- rod travel mm
2 ca. 58 700 1125 1150 1200 1300	17,6-18,0 12,0-17,0 0 - 7,5	ca. 22	150 400 700 1100 1160	15,0-18,0 7,8-8,8 1,8-2,4 1,8-2,4		150 250 400 530	9,8-11,9 7,8-8,2 2,3-4,5 0	-	-

Torque control travel a =

Speed regulation: At 1130-1140 milmil less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-load	delivery	Control rod stop at speed	Fuel-de charact	livery teristics	Startin	
(Test oil	temperature 40°) cm³/1000 strokes	min Leerlauf	min=1 4	cm <sup>3</sup> /1000 strokes 5	min.	cm <sup>3</sup> /1000 strokes 7
1100	18 mm RW	300 = 8,0 mm RW	-	-	100	Shutoff solenoid 0,5 - 1,5 mm in front of stop
			l			11.83

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 e

1. Edition

PE 12 ZW 150/120 RS 1008/11

ROUV 300-1200 ZWA 50 R

Replaces

MTU Engine MB 12 V 331

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  $0-45-60-105-120-165-180-225-240-285-300-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing a Rotational	Control-	(2.45-2.65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min	mm	cm <sup>3</sup> /1000 strokes	cm:/1000 strokes	cm3/1000 strokes 5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600 300	9,0 9,0	131,0-151,0 70,0-90,0	16,0 (24,0) 10,0 (15,0)	126,0-156,0 65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min 5	ed  Control- rod travel  mm  S	Lower rat Control lever de flection degrees 7	mia 8	Control- rod travel mm 9	min 10	Control- rod travel mm
ca.85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7.2 2,6-3,7 0.3-2,1 0	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0		•

Torque control travel a = \*

Speed regulation At 1230-1240 minnih less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever i temperature 40°)	Control ro at speed	d stop	Fuel-de charac	elivery teristics	Startif	ng tuel ry
min 1	cm3/1000 strokes	min 3	Idle	min 4	cm <sup>3/1</sup> 000 strokes 5	min 6	cm·/1000 strakes 7
1200	18 mm RW	300 = 8,0	mm RW	-	-		Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets

WPP 001/4 MTU 39,7 e 1

1. Edition

PE 12 ZW 150/120 RS 1008/11

RQUV 300-1200 ZWA 55 R

Replaces Firm

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

 $0-45-60-105-120-165-180-225-240-285-300-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Engine MB 12 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

mm (from 5001v1 12 Port closing at prestroke

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
	12	107 0 607 0	45 0 (00 0)	101 0 510 0	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	_
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated Control lever deflection degrees	mm min	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm
ca.85	200 250 300 350 420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a == -

Speed regulation At 1230-1240 minmin less control rod travel

# C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control r at speed		Fuel-de charac	elivery teristics	Starting fuel delivery		
miñ 1	cm <sup>3</sup> /1000 strokes	min 3	Idle	min 4	cm:/1000 strokes 5	min 6	cm <sup>2</sup> /1000 strokes 7	
1200	18 mm RW	300 = 8,0	mm RW	-		_	Shutoff solenoid 0,5 - 1,5 mm in front of stop	
							11.83	

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 e 1

1. Edition

PE 8 ZW 150/120 RS 1009/11

RQU 250-400/1100 ZWA 49 R

Replaces

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} : 0,5^{\circ} (+ 0,75^{\circ})$ 

MTU Engine MB 8 V 331

Note VDT-W 400/305!

Governor adjustment according to VDT-I-420/112

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travei	Average value	in fuel delivery	Checking values	valve)
min '	mm	cm 1/1000 strokes	cm 1/1000 strokes	cm /1000 strokes	
1	2	3	4	5	
1000 600 300	9,0 9,0 9,0	497,0-507,0 131,0-151,0 70,0-90,0	15,0(22,0) 16,0(24,0) 10,0(15,0)	494,0-510,0 126,0-156,0 65,0- 95,0	

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed spee	d	Torqu	e controi
Control lever deflection degrees 1	mm min ' 2	Control- rod travel mm min 1 3	Control lever flection degrees 4	min 5	Control- rod travel mm	Control lever de- flection degrees 7	mın 8	Control- rod travel mm 9	min '	Control- rod travel mm 11
ca.58	700 1125 1150 1200 1300	13,0-18,5 17,6-18,0 12,0-17,0 0- 7,5 0- 1,0		150 400 700 1100 1160	15,0-18,0 7,8-8,8 1,8-2,4 1,2-2,4 0		150 250 400 530	9,8-11,9 7,8- 8,2 2,3-4,5 0		-

Torque control travel a =

Speed regulation At 130-1140 minimm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery		
min <sup>;</sup> 1	cm <sup>3</sup> /1000 strokes 2	min   Idle speed	min '	cm <sup>1</sup> /1000 strokes 5	min 6	cm 1/1000 strokes 7		
1100	18 mm RW	300 = 8,0 mm RW	-	-	100	18,0-18,2 mm RW shutoff solenoid 0,5-1,5 mm before stop		

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WPP 001/4 MTU 26,5 e

1. Edition

RQUV 300-1200 ZWA 50 R

Firm MTU

Replaces

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Engine MB 8 V 331

Note VDT-W-400/305

PE 8 ZW 150/120 RS 1009/11

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke (2\_45=2.65)

mm (from BDCZy1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery cm <sup>3</sup> /1000 strokes	Checking values cm-/1000 strokes	valve)
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600 300	9,0 9,0	131,0-151,0 70,0-90,0	16,0 (24,0) 10,0 (15,0)	126,0-156,0 65,0-95,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min '	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min B	Control- rod travel mm 9	min 10	e control Control- rod travel mm 11
ca.85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	2,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1		300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a =

mm

Speed regulation At 1130-1140 minnin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	ernor control lever it temperature 40°)	Control rod stop at speed	Fuel-de charact		Startii	ng fuel ry
min 1	cm <sup>2</sup> /1000 strokes	min Idle	min 4	cm /1000 strokes 5	mın 6	cm:/1000 strokes 7
1200	18 mm RW	300 = 8,0 mm RW	-	-	-	Shutoff solenoid 0,5 - 1,5 mm in front of stop

Checking values in brackets



Testoi-150 A-13

## Test specifications Fuel injection pumps and governors En.

WPP 001/4 MTU 39,7 b 1

2. Edition

Replaces 5.83 RQUV 300-1200 ZWA 51 R PE 12 ZW 150/120 RS 1010/11 Firm MTU Komb.-Nr. 0 402 430 004 12 V 331 1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6  $0-45-60-105-120-165-180-225-240-285-300-345^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing a		(2,45-2,65)	mm (from BDQy].	Fuel delivery	Spring pre-tension
Rotational	Control-	Fuel delivery	Dillerence		(torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	(valve)
	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
ការ។ -	2	3	4	5	
1000	10.0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
1000	18,0			126,0-156,0	1
600	9,0	131,0-151,0	1 1 1 1 1 1 1 1 1 1		
300	9,0	70,0-9,0	10,0 (15,0)	65,0-95,0	
			1	i	
			1	1	
			1	1	
	1			1	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	min 1	e control Control- rod travel mm
ca.85	0,4-6,4	ca.30	375 250 500 600 730	6,0-7,2 12,2-14,6 2,6-3,7 0,8-2,1		300 150 400 570	7,3-8,6 14,3-16,1 2,8-4,3 0	_	-

Torque control travel a =

Speed regulation At 1230-1240 milmin less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-load	d delivery ernor control lever temperature 40°)	Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery		
min '	cm <sup>3</sup> /1000 strokes	min Idle	min ·	cm³/1000 strokes 5	mın 6	cm <sup>2</sup> /1000 strokes 7		
1200	18 mm RW	300 = 8,0 mm RW	-	•	-	-		
				<u> </u>		11.8		

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 &

5. Edition

Replaces 78

PE 6 ZW 160/120 RS 1012/11

RQUV 300-900 ZWA 51 R

Firm. MTU

1 - 2 - 3 - 4 - 5 - 6 0 -45 -120-165-240-285° ± 0,5° (±0,75°)

EngineMT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

# A. Fuel-injection-pump settings

Zy1. 6 mm (from BDC) Port closing at prestroke (2.45-2.65)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min :	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	]3			
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
			1		
1	İ				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min-: 3	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	тіп 8	Control- rod travel mm 9	min 10	e control- rod travel mm
ca. 85	920 950 1020 1090	14,4-18,6 4,0-10,2	ca. 30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0		100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a =

Speed regulation At 910-915 min 1 mm less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-loa	d delivery ernor control lever il temperature 40°)	Control rod stop at speed		Fuel-de charact		Startir delive	ng fuel
min 1	cm <sup>3</sup> /1000 strokes	min 3	idle	min 4	cm <sup>2</sup> /1000 strokes 5	min 6	cm³/1000 strokes 7
900	18 mm RW	300 = 8 mm	Rw	•	-	-	-
							11 83

Checking values in brackets

Teston-180 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 b

Edition

RQUV 750 ZWA 53 R PE 6 ZW 160/120 RS 1012/11

1 - 2 - 3 - 4 - 5 - 6

0 -45 -120-165-240-285° ± 0,5° (± 0,75°)

Replaces Firm Engine MT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing a Rotational	Control-	(2,45-2,65)   Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel deliver;	Checking values	valve)
min-1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	•
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	
	1				

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	mm min-: 2	Control- rod travel mm min 1	Medium ra Control lever flection degrees 4	min 5	ced Control- rod travel mm	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	101qu	e control Control- rod travel
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770 790 810	9,6-11,8 1,4-5,2 0								

Torque control travel a =

Speed regulation: At 760-765 milham less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-loa	d delivery ernor control lever	Control rod stop at speed	Fuel-de charac	livery teristics	Startin deliver	
(Test or	temperature 40°) cm³/1000 strokes	idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	-	-	-	-

Checking values in brackets

Testoil-150 4-113

# **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 23,8 c Edition

PE 6 ZW 160/120 RS 1012/11

RQUV 900 ZWA 53 R

Replaces Firm MTU

1 - 2 - 3 - 4 - 5 - 6 0 -45 -120-165-240-285° 0,5° (\* 0,75°)

Engine MT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

2,50-2,60 Zyl. 6 mm (from BDC) Port closing at prestroke (2.45 - 2.65)Spring pre-tension Fuel delivery Difference Rotational Fuel delivery (torque-control valve) in fuel delivery Checking values Average value rod travel speed cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes mm min": 510,0-526,0 16,0 (24,0) 513,0-523,0 18,0 600 135,0-165,0 12.0 (18,0) 140.0-160.0 9.0 600 67,0-97,0 11,0 (16,0) 72,0-92,0 300 9.0

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

00	nm	Control- rod travel mm min : 3	Medium ra Control lever flection degrees 4	min 5	cd Control- rod travel mm	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	min 1	e control Control- rod travel mm
	900 920 940 965	18,0 11,1-12,0 1,4-5,6 0	-	-	-	-	-	-		-

Torque control travel a =

Speed regulation: At 910-915 min 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever		Control rod stop at speed		Fuel-delivery characteristics		Starting fuel delivery		
(Test or	temperature 40°) cm³/1000 strokes	idle stop	min . 4	cm <sup>1</sup> /1000 strokes 5	rnin 6	mi/1000 strokes 7		
900	18 mm RW	12 mm RW	-	-	•	•		

Checking values in brackets

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# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 23,8 f

Edition

RQU 750 ZWA 56 R PE 6 ZW 160/120 RS 1012/11

1 -2- 3- 4- 5- 6 0-45-120-165-240-285° -+ 0,5° (+ 0,75°)

Replaces Firm MTU Engine MT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

mm (from BDZy1. 6 Port closing at prestroke (2,45-2,65)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min <sup>-1</sup>	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor settings

Upper rated Control lever deflection degrees	mm min-'	Control- rod travel mm min '	Medium ra Control lever flection degrees 4	min '	Control- rod travel mm	Lower rat Control lever de- flection degrees 7	min 1	d   Control-   rod   travel   mm   9	min 10	e control Control- rod travel mm
ca. 52	750 720 750 770 780 800	18,0 25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0 0	-	•		-		-	-	-

Torque control travel a =

Speed regulation At 760-765 min mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever il temperature 40°)	Control rod stop at speed 101e Stop		Fuel-delivery characteristics		g fuel Y
min '	cm <sup>3</sup> /1000 strokes 2	min '	min . 4	cm³/1000 strokes 5	min '	cm³/1000 strokes 7
750	18 mm RW	12 mm RW	-	-	100 with	ca. 20 mm RW starting magnet

Checking values in brackets

WPP 001/4 MTU 23,8 d 1. Edition

Replaces

Firm MTU

Engine MT 6 V 396

PE 6 ZW 160/120 RS 1012/11 RQU 900 ZWA 56 R

1 - 2 - 3 - 4 - 5 - 6 0 -45 -120-165-240-285 - 0,5° (+ 0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

mm (from BDC) Zyl. 6 Port closing at prestroke (2,45-2,65)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	(torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min-"	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
1	2	542 0 523 0	16,0 (24,0)	510,0-526,0	
600	18,0	513,0-523,0	•	135,0-165,0	-
600	9,0	140,C-160,0	12,0 (18,0)	, ·	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm Torque control

Upper rated Control lever deflection degrees 1	mm min 2	Control- rod travel mm min '	Medium ra Control lever flection degrees 4	min 5	cd Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	min 10	Control- rod travel mm 11
ca. 52	900 860 880 900 930 960	18,0 26,8-32,4 22,3-26,3 17,0-19,0 3,7-10,0		-	-	-	-	•	•	

Torque control travel a =

Speed regulation: At

# C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever		Gontrol rod stop at speed			Starting	
(Test of	cm <sup>3</sup> /1000 strokes	idle stop	min . 4	cm -1000 strokes 5	min 6	cm <sup>1/</sup> 1000 strokes 7
900	18 mm RW	12 mm RW	-	•		ca. 20 mm RW h starting magnet
						11.83

Checking values in brackets

WPP 001/4 MTU 23,8 e

Replaces

PE 6 ZW 160/120 RS 1012/11 RQU 750 ZWA 57 R

r ---

Firm

1- 2- 3- 4- 5- 6 0-45-120-165-240-285° ± 0,5° (± 0,75°) Engine MT 6 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

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Microsoft to serve and	0
-	Colon
ì	4

Port closing a	2	2,50-2,60	mm (from BDC)	Zyl. 6	
Rotational speed min	Control- rod travel mm	Fuel delivery  Average value  cm³/1000 stroke;	Difference in fuel delivery cm <sup>3</sup> /1000 strokes	Fuel delivery Checking values cm <sup>3</sup> /1000 strokes 5	Spring pre-tension (torque-control valve)
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min 1	Medium ra Control lever flection degrees 4	min 5	Control- rod travei mm	Lower rat Control lever de- flection degrees 7	ed speed min B	d Control- rod travel mm 9	min 10	control Control- rod travel mm
ca. 52	750	18,0	•	-	-	-	-	-	-	-
	720 750 770 780 800	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0	1							

Torque control travel a =

mm

Speed regulation At 760-765 minmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	id delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
(Test or	temperature 40°) cm³/1000 strokes 2	idle stop	min 4	cm:/1000 strokes 5	min 6	cm·/1000 strokes 7	
750	18 mm RW	12 mm RW	-	-	-	-	
		., -					

Checking values in brackets

Testorico 413

# **Test specifications** Fuel injection pumps and governors

WPP 001/4 MTU 31,7 a 1. Edition

PE 8 ZW 160/ 120 RS 1013/11

RQUV 300-900 ZWA 51 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Note VDT-W-400/305

Replaces

MTU

Engine: MT 8 V 396

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2 /15\_2 65)

mm (from BDQV1. 8

prestroke (2,	45-2,65)		E at delwegu	Spring pre-tension
Control-	Fuel delivery	Difference	Fuel delivery	(torque-control
rod travel	Average value	in fuel delivery	Checking values	valve)
mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
2	3	4	5	
18.0	513.0-523.0	16,0(24,0)	510,0-526,0	-
		1	135,0-165,0	
1	72,0-92,0	11,0(16,0)	67,0-97,0	
	Control-	rod travel Average value mm cm³/1000 strokes 2 3 18,0 513,0-523,0 9,0 140,0-160,0	Control- rod travel Average value in fuel delivery  mm cm³/1000 strokes 2 3 4 18,0 513,0-523,0 16,0(24,0)  9,0 140,0-160,0 12,0(18,0)	Control- rod travel Average value in fuel delivery Checking values cm <sup>3</sup> /1000 strokes 2  18,0 513,0-523,0 16,0(24,0) 510,0-526,0 9,0 140,0-160,0 12,0(18,0) 135,0-165,0

Adjust the fuel delivery from each outlet according to the values in

### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	mm min-'	Control- rod travel mm min-	Medium ra Control lever flection degrees	min"	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min-	Control- rod travel mm		e control Control rod travel mm
ca. 85	920 950 1020 1090	18,0-21,5 14,4-18,6 4,0-10,2 0 - 2,0	ca. 30		13,0-15,0 10,0-11,5 8,0 2,5-4,2		100 300 450 570	14,2-16,0 8,0 1,6-3,7 0	-	-

Torque control travel a =

Speed regulation: At 910-915 min1mm less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-load	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact	livery eristics	Starting	
min-'	cm <sup>3</sup> /1000 strokes	min 3 Idle	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>2</sup> /1000 strokes 7
900	18 mm RW	300 = 8 mm RW	-	-	-	•
						11 02

Checking values in brackets

WPP 001/4 MTU 31,7 b 1. Edition

PE 8 ZW 160/ 120 RS 1013/11

RQUV 750 ZWA 53 R

$$1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 \text{ je } 45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$$

Replaces Firm: Engine MT 8 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

2,50-2,60 mm (from BD党), 1 Port closing at prestroke 45-2.65 Spring pre-tension Fuel delivery Difference Fuel delivery Rotational (torque-control valve) Checking values in fuel delivery Average value rod travel speed cm<sup>3</sup>/1000 strokes cm3/1000 strokes cm<sup>3</sup>/1000 strokes min 1 510,0-526,0 16,0(24,0) 513,0-523,0 18,0 600 135,0-165,0 140,0-160,0 12,0(18,0) 9.0 600 67,0-97,0 72,0-92,0 11,0(16,0) 9.0 300

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Sleeve position 49,5 mm

		Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm	min 10	control- rod travel mm
ca. 69	750 770 790 810	18,0 9,6-11,8 1,4-5,2 0	•	•		-	-	-	-	-

Torque control travel a =

Speed regulation. At

760-765 min less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed	Fuel-de charac	hiwery- teristics	Startin deliver	
(Test or min-1	cm <sup>3</sup> /1000 strokes	idle stop	mın 4	cm <sup>3</sup> /1000 strokes 5	min.,	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	-	-	-	

Checking values in brackets

WPP 001/4 MTU 31,7 c Edition

PE 8 ZW 160/120 RS 1013/11

RQUV 900 ZWA 53 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je 
$$45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$$

Replaces

Engine MT 8 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

9,0

300

mm (from BDØy1.8 Port closing at prestroke (2,45-2,65)Spring pre-tension Fuel delivery Difference Fuel delivery (torque-control Control-Rotational valve Checking values in fuel delivery Average value rod travel speed cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes cm<sup>3</sup>/1000 strokes mm min-: 510,0-526,0 16,0(24,0) 513,0-523,0 18,0 600 135,0-165,0 12,0(18,0) 140,0-160,0 9,0 600

11,0(16,0)

Adjust the fuel delivery from each outlet according to the values in [

72,0-92,0

## **B. Governor settings**

Sleeve position 49,5 mm

67,0-97,0

Upper rated Control lever deflection degrees	speed	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min :	Control- rod travei mm 6	Lower rat Control lever de- flection degrees 7		Control- rod travel mm 9	min 10	e control Control- rod travel mm
ca. 70	900 920 940 965	1,4-5,6	-	-	-	-	-	-	3	-

Torque control travel a =

Speed regulation: At 910-915 min 1 mm less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-loa	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact	livery eristics	Startini deliver	
(Test or	cm <sup>3</sup> /1000 strokes	idle stop	miri 4	cm³/1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW	12 mm RW	-	-	-	-
	į					14.03

Checking values in brackets

WPP 001/4 MTU 31,7 f 16 Edition

PE 8 ZW 160/120 RS 1013/11

RQU 750 ZWA 56 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Replaces

Firm MTU

Engine MT 8 V 396

Note VDT-W-400/305

Ali test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Rotational	Control-	45-2 65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speea	rod travel	Average value	in fuel delivery	Checking values	valve)
min-i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	_
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min-'	Control- rod travel mm min	Medium ra Control lever flection degrees 4	min-1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ed speed min 8	Control- rod travel mm 9		e control Control- rod travel mm
ca. 52	750	18,0	-	-	-	-	-	-	-	-
	720 750 770 780 800	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0								

Torque control travel a = "

Speed regulation: At 760-765 minmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting deliver	
(Test oil	temperature 40°) cm <sup>3</sup> /1000 strokes 2	idle stop	min ·	cm³/1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	-	-	100 wit	ca. 20 mm RW h starting magnet

Checking values in brackets

11-83

Testoiles 0 413

Fuel injection pumps and governors

WPP 001/4 MTU 31,7 d 1. Edition

PE 8 ZW 160/120 RS 1013/11

RQU 900 ZWA 56 R

Replaces Firm

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0;5^{\circ} (\pm 0,75^{\circ})$ 

Engine MT 8 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-pump settings

Port closing at prestroke (2.45-2.65)

mm (from BDZyl. 8

ort closing a		,45-2,55) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
Rotational	Control-	Fuel delivery			valve)
speed	rod travel	Average value	in fuel delivery	Checking values	Valve
min '	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	-
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
		1			

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees 1	mm min '	Control- rod travel mm min '	Medium ra Control lever flection degrees 4	min '	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min '	Control- rod travel mm 9	min - 10	e control Control- rod travel mm 11
ca. 52	900	18,0	-	-	~	-	-	-	-	-
	860 880 900 930 960	26,8-32,4 22,3-26,3 17,0-19,0 3,7-10,0						min 7 hm le		

Torque control travel a =

Speed regulation: At 910-915 min 1 hm less control rod travel

# C. Settings for fuel-injection pump with fitted governor

OR COVE	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact	livery eristics 1	Starting	
(Test of	temperature 40°) cm³/1000 strokes	idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes
900	18 mm RW	12 mm RW	-	•	100   wi	ca. 20 mm RW th starting magne
		<u> </u>		, , , , , , , , , , , , , , , , , , , ,		11 83

Checking values in brackets

WPP 001/4 MTU 31,7 e

1. Edition

PE 8 ZW 160/120 RS 1013/11 RQU 750 ZWA 57 R

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Replaces Firm MTU

Engine MT 8 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

2,50-2,60
Port closing at prestroke (2.45-2.65) mm (from BDS)1 8

Port closing at p	prestroke (2,	45-2,65)	min (nom bozy).	0	Spring pre-tension
Rotational		Fuel delivery	Difference	Fuel delivery	(torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min	mm	cm <sup>3</sup> /1000 strokes	cm=/1000 strokes	om 11000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	_
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0(16,0)	67,0-97,0	
1	1	1	<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees 1		Control- rod travel mm min·' 3	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	ed spee min 8	Control- rod travel mmi	min-	control Control- rod travel mm
ca. 52	750 720 750 770 780 800	18,0 25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0 0	-	-	-	-	-	-	-	•

Torque control travel a =

mm

Speed regulation At 760-765 min min less control rod travel

# C. Settings for fuei-injection pump with fitted governor

on acve	delivery rnor control lever	Control rod stop at speed	Fuel-de charact	livery eristics	Starting fuel delivery		
Test oil)	temperature 40°) cm³/1000 strokes 2	idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
750	18 mm RW	12 mm RW	-		-	-	

Checking values in brackets

11.83

BOSCH

WPP 001/4 MTU 47.5 d

1. Edition

PE 12 ZW 160/120 RS 1015/11 RQUV 300-900 ZWA 51 R

<del>Реріаст.</del> MTU

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

MT 12 / 336 £ + +2 ++4+

0-45-60-105-120-165-180-225-240-285-300-345°±0,5° (±0,75°)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65)

mm (from BDZyl. 12

Rotational Control- speed rod travel Average value cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes 5  1 2 3 16,0 (24,0) 510,0-526,0  600 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0	Port closing a		2,45-2,65)	Difference	Fuel delivery	the Brains of the Contract
speed rod travel Average value in fuel delivery cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes 5  1 2 3 600 18,0 513,0-523,0 16,0 (24,0) 510,0-526,0  600 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0	Rotational	Control-	Fuel delivery	Dillerence	1	t may "The
mm cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes cm <sup>3</sup> /1000 strokes 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	speed		Average value	in fuel delivery		
1 2 3 4 5 600 18,0 513,0-523,0 16,0 (24,0) 510,0-526,0 - 600 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0			cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm1/1000 strokes	
600 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0	min'	2		4	5	
600 9,0 140,0-160,0 12,0 (18,0) 135,0-165,0	<u></u>	10.0	513 0-523 0	16.0 (24.0)	510.0-526.0	-
5,0 170,0 100,0 12,0 (15,0) 67,0 07,0	600	10,0	313,0-323,0	_ 10,0 (21,0)		
57.0.07.0	600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
			<b>I</b>	11 0 (16 0)	67.0-97.0	
300 9,0 72,0-92,0 11,0 (16,0) 67,0-97,0	1300	9,0	12,0-32,0	111,0 (10,0)	0.,000,00	

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	speed	Control- rod travel mm min '	Medium ra Control lever flection degrees	min 5	ed  Control-  rod  travel  mm  6	Lower rat Control lever de- flection degrees 7	min 8	d  Control-  rod  travel  mm  9	min 10	control Control- rod travel mm
ca. 85		18,0-21,5 14,4-18,6 4,0-10,2 0-2,0	ca.30	200 300 375 500 630	13,0-15,0 10,0-11,5 8,0 2,5-4,2 0		100 300 450 570	14,2~16,0 8,0 1,6-3,7	-	-

Torque control travel a =

Speed regulation: At 910-915 min-1mm less control rod travel

# C. Settings for fuel-injection pump with fitted governor

Full-loa	ad delivery ernor control lever il temperature 40°)	Control ro at speed		Fuel-de	livery eristics	Startin deliver	Ĭ
min '	cm <sup>3</sup> /1000 strokes	min 3	Idle	min · · 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7
900	18 mm RW		300 3 mm RW	-	-	-	-

Checking values in brackets

WPP 001/4 MTU 47,5 e

1. Edition

Replaces

PE 12 ZW 160/120 RS 1015/11 RQUV 750 ZWA 53 R

Firm

Engine MT 12 V 396

1-12- 9- 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6 0-45-60-105-120-165-30-225-240-285-300-345°±0,5° (±0,75°)

Note VDT-W-400/305,

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Post closing a Rotational	Control-	2.45-2.65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	ın fuel delivery	Checking values	vaive)
min-1	mm 2	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	-
600 300	9,0	140,0-160,0 72,0-92,0	12,0 (18,0) 11,0 (16,0)	135,0-165,0 67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees	mm min '	Control- rod travel mm min :: 3	Medium ra Control lever flection degrees 4	min-1	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	1	Control- rod travel mm 9		Control- rod travel mm
ca. 69	750	18,0	-	-	-	-	-	-	-	-
	770 790 810	9,6-11,8 1,4-5,2 0								

Torque control travel a =

Speed regulation: At 7 760-765 minmin less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
(Test or min-1	cm <sup>3</sup> /1000 strokes	idle stop	min · ·	cm <sup>3</sup> /1000 strokes 5	mın '	cm <sup>3</sup> /1000 strokes 7	
750	18 mm RW	12 mm RW	-	•	•		

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 c

Edition

PE 12 ZN 160/120 RS 1015/11 RQU 750 ZWA 57 R

Replaces 5.83

1-12-9-4-5-8-11-2-3-10-7-6  $0-45-60-105-120-165-180-225-240-285-300-345° ^{+}0,5° ( ^{+}0,75°)$ 

Engine: MY 12 V 396

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke (2,45,2,66)

mm (from BD)CV1

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min 1	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes 5	
1	12	3	16 0 (24 0)	540 0 526 0	
600	18,0	513,0-523,0	16,0 (24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0 (18,0)	135,0-165,0	
300	9,0	72,0-92,0	11,0 (16,0)	67,0-97,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Sleeve position 49,5 mm

Upper rated Control lever deflection degrees 1	mm min 1	Control- rod travel mm min <sup>-1</sup> 3	Medium ra Control lever flection degrees 4	min 1	ed  Control-  rod  travel  mm  6	Lower rat Control lever de- flection degrees 7	min 1	Control- rod travel mm	min 10	e control Control- rod travel mm
ca. 52	750	18,0	-	-	-	-	-	-	-	
	720 750 770 780 800	25,6-30,6 17,0-19,0 6,8-11,8 0,5-8,0								

Torque control travel a =

Speed regulation: At 760-765 min mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever	Control rod stop	Fuel-de charact		Startin- deliver	
(Test or min-1	temperature 40°) cm³/1000 strokes	idle stop	mın ' 4	cm³/1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7
750	18 mm RW	12 mm RW	•	-	-	-

Checking values in brackets

WPP 001/4 MTU 26,5 d

1. Edition

PE 8 ZW 150/120 RS 1019/11

RQUV 300-1200 ZWA 51 R

Replaces

1004 300 1200 2....

Engine MTU MB 8 V 331

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing a Rotational	Control-	45-2 65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min" (	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm#1000 strokes	
1	2	3	4	5	
1000	18,0	497,0-507,0	15,0 (22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0 (24,0)	126,0-156,0	i
300	9,0	70,0-90,0	10,0 (15,0)	65,0-95,0	
	1				

Adjust the fuel delivery from each outlet according to the values in

## **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min '	Control- rod travel mm min : 3	Medium ra Control lever flection degrees 4	min 5	ed   Control-   rod   travel   mm   6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm
ca.85	1200 1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0-2,0	ca.30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	150 300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a = -

mm

Speed regulation: At 1230-1240 minmi less control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control rod stop at speed	Fuel-de charact		Startin	
min 1	cm²/1000 strokes	min Idle	min : 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm=/1000 strokes 7
1200	18 mm RW	300 = 8,0 mm RW	-	-	-	

Checking values in brackets

## Test specifications Fuel injection pumps and governors En.

WPP 001/4 MTU 19,9 b1 1. Edition

PE 6 ZW 150/120 RS 1021/11

RQUV 300-1200 ZWA 51 R

Replaces

Firm

$$1 - 2 - 3 - 4 - 5 - 6$$
  
 $0 - 45 - 120 - 165 - 240 - 285^{\circ} + 0,5^{\circ} (+0,75^{\circ})$ 

Engine MB 6 V 331

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

mm (from BDQ)/1. 6

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min · l	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	14	13			
1000	18,0	497,0-507,0	15,0(22,0)	494,0-510,0	-
600	9,0	131,0-151,0	16,0(24,0)	126,0-156,0	
300	9,0	70,0-90,0	10,0(15,0)	65,0-95,0	
		1			

Adjust the fuel delivery from each outlet according to the values in lacksquare

#### B. Governor settings

Upper rated Control lever deflection degrees 1		Control- rod travel mm min : 3	Medium ra Control lever flection degrees 4	min <sup>- :</sup> 5	Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm 11
ca. 85	1250 1300 1350 1420	8,0-21,0 12,2-16,8 6,4-11,6 0,4-6,4 0 -2,0	ca. 30	250 375 500 600 730	12,2-14,6 6,0-7,2 2,6-3,7 0,8-2,1	ca.23	300 400 570	14,3-16,1 7,3-8,6 2,8-4,3 0	-	-

Torque control travel a =

Speed regulation: At 1230-1240 mimmless control rod travel

## C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever I temperature 40°)	Control ro at speed	od stop		Fuel-delivery characteristics		g fuel y
ភាព 1	cm <sup>2</sup> /1000 strokes	min: 1	Idle	min 4	cm <sup>2</sup> /1000 strokes 5	min . 6	cm <sup>3</sup> /1000 strokes 7
1200	18 mm RW		OO mm RW	-	-	-	

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 b 2. Edition

PE 8 ZW 160/120 RS 1027/11 RQUV 300-1200 ZWA 51 R Komb.-Nr. 0 402 438 024 1-2-6-3-4-5-7-8 je  $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$ 

Replaces 83

Firm MTU Engine 331

Note VDT-W-400/305

Rotational

600

600

300

speed

min '

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Port closing at prestroke (2,45-2,65)

> Controlrod travel

mm

18,0

9,0

9,0

- 1	mm (from Buzdy)1.	<b>-</b>	
	Difference	Fuel delivery	Spring pre-tension (torque-control
	in fuel delivery	Checking values	valve)
	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	
	4	5	
	16,0(24,0)	510,0-526,0	
	12,0(18,0)	135,0-165,0	
	11,0(16,0)	67,0-97,0	
	•		

Adjust the fuel delivery from each outlet according to the values in

Fuel delivery

Average value

cm<sup>3</sup>/1000 strokes

513,0-523.0

140,0-160,0

72,0-92,0

#### **B.** Governor settings

Upper rated Control lever deflection degrees		Control- rod n = 1 travel mm min 3	Medium ra Control lever flection degrees 4		ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm 11
ca.84	1200	18,0-19,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0 4,0 1400	1205-1225 1320-1380 0 - 2,0		200 300 500 720	14,3-17,2 10,3-11,8 2,5-3,7 0		200 400 590	10,8-14,2 3,9-5,0 0		

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

	Starting		Fuel-de charact	Control rod stop at speed	d delivery ernor control lever I temperature 40°)	on gove
cm³/1000 strokes 7	ការភ 6	cm³/1000 strokes 5	min 4	min 3	cm <sup>2</sup> /1000 strokes	min 1
				300 .= RW 8,0 mm		
					he engine in acc	The on the
				dordance with		on the

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 39,7 c

2. Edition

PE 12 ZW 160/120 RS 1029/11 RQUV 300-1200 ZWA 51 R

Komb.-Nr. 0 402 430 009

1 - 12- 9 - 4 - 5 - 8 - 11- 2 - 3 - 10- 7 - 6

Replaces
5.83
Firm MTU
Engine 331

 $0 - 45 - 60 - 105 - 120 - 165 - 180 - 225 - 240 - 285 - 300 - 345^{\circ} + 0,5^{\circ} + 0,5^{\circ}$ 

Note VDT-W-400/305 ! All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

Control-	2,45-2,65) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
rod travel	Average value	in fuel delivery	Checking values	valve)
mm 2	cm <sup>3</sup> /1000 strokes	cm=/1000 strokes	cm <sup>3</sup> /1000 strokes 5	
18,0	513,0-523,0	22,0(33,0)	510,0-526,0	
9,0 9,0	140,0-160,0 72,0-92,0	12,0(18,0) 11,0(16,0)	135,0-165,0 67,0-97,0	
	rod travel mm 2 18.0 9,0	Control- Fuel delivery rod travel Average value mm cm³/1000 strokes 2 3  18,0 513,0-523,0 9,0 140,0-160,0	Control- Fuel delivery Difference rod travel Average value in fuel delivery cm <sup>3</sup> /1000 strokes 2 3 cm <sup>2</sup> /1000 strokes 4 18.0 513.0-523.0 22.0(33.0) 9.0 140.0-160.0 12.0(18.0)	Control-         Fuel delivery         Difference         Fuel delivery           rod travel         Average value         in fuel delivery         Checking values           mm         cm³/1000 strokes         cm²/1000 strokes         cm²/1000 strokes           2         3         4         5           18.0         513.0-523.0         22.0(33.0)         510.0-526.0           9,0         140.0-160.0         12.0(18.0)         135.0-165.0

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees		Control- rod _1 mapel mm min: 3	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm	min 10	e control Control rod travel mm
ca. 84	1200 17,0 4.0 1400	18,0-19,0 1205-1225 1320-1380 0 - 2,0	ca. 27		8,0 14,3-17,2 10,3-11,8 2,5-3,7	1	300 200 400 <b>590</b>	8,0 10,8-14,2 3,9-5,0 0	-	-

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on gevernor control lever		Control rod stop at speed	Fuel-06	envery teristics	Starting fuel delivery		
Test oil	temperature 40 ) cm <sup>2</sup> /1000 strokes	idle stop	mirr 4	cm <sup>2</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
		300 = RW 8,0 mm					
on th	nown ull-load deliv e engine in ac ngine inspecti	ery is adjusted cordance with on sheet.					

Checking values in brackets

11.83

**BOSCH** 

eschaftsbereich KH. Kundendienst. Kfz Ausfüstung. Dy Anbert Bosch GmbH. Dit Stuttgart 1. Postfach 50. Printed in the Fiederal Republic of Germany.

WPP 001/4 DAI 22,4 b

6. Edition

PE 6 ZWM 140/120 RS

RQU 425/1100 ZW 18 D ROU 425/1100 ZW 23 D Replaces Firm

Daimler-Benz

2.66

Engine MB 333 Ba

1-2-3-4-5-1

0-45-120-165-240-285 · 0,5° (· 0,75°) Note VDT-W 400/305!

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

Port closing at prestroke

mm (from BDC) Cyl. 6; (1.95-2.15)

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min '	mm	cm 1/1000 strokes	cm 1/1000 strokes	cm·/1000 strokes	
1	2	3	4	5	
600	18	373,0-378,0	11,0(16,0)	369,0-382,0	
600	9	143,0-163.0	14,0(21,0)	148,0-168,0	
200	9	71,0- 91,0	14,0(21,0)	66,0 - 95,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated	Upper rated speed			Medium rated speed			ed spee:	Torque control		
Control	' i	Control-	Control		Control-	Contr 1		Control-		Control-
lever		rod	lever		rod	lever de-		rod		rod
deflection	mm	travel	flection		travel	flection		travel		travel
degrees	min .	mm min '	degrees	min	mm	degrees	י מווח	w;u	min 1	mm
1	2	3	4	5	6	7	8	9	10	11
ca.60	550	23,5-24,0	Sliding	-bloc	position	ca.22	600	2,8-3,2	500	21,8-22,4
ca.58			0,,,,,,,		,		425	6,1-6,5	800	20,8-21,4
	1150						200	13,2-14,0	1000	20,2-20,5
	1200	, ,					350			19,9-20,2
	1250	2,6-10,0					800	2,3-2,8	1130	max.1mm
	1350	•			•		1100	1,6-2,0	1	less
							1180	0		

Torque control travel  $a = 0,4 \cdot mm + 0,05$ 

Speed regulation. At 1130 min<sup>-1</sup> timm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor Control lever (Test oil temperature 40°)		Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
min 1 1	cm <sup>3</sup> /1000 strokes 2	min ' 3	min ' 4	cm <sup>1</sup> /1000 strokes 5	mın ' 6	cm <sup>-</sup> /1000 strokes 7	
1080	342,0-346,0	0,5-1,5 mm before stop	900 700 550	318,0-326,0	100 1220	18,0-18,2 mm RW 	

Checking values in brackets

Geschaftsbereich KH. Kundendienst. Ktz. Ausrustung.

5. by Robert Bosch GmbH. D. 7. Stuttgart 1, Postfach 50. Printed in the Federal Republic of Germany Imprimé en Republique Festerale d'Alfemagne par Robbrt Bosch GmbH.

WPP 001/4 MTU 29,9 c

9. Edition

PE 8 ZWM 140/120 RS 19/11 Komb.-Nr. 0 406 038 018

ROUV 300-1100 ZWA 40 R

Replaces 2.74 UTM

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

Engine MB 837 Ba (660 PS)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

## A. Fuel-injection-pump settings

mm (from BDC) Port closing at prestroke (1. Spring pre-tension Fuel delivery Difference Fuel delivery Control-(torque-control Rotational valve) Checking values in fuel delivery Average value rod travel speed cm3/1000 strokes cm3/1000 strokes cm<sup>3</sup>/1000 strokes mm min : 370,0-381,0 373,0-378,0 11,0 (16,0) 600 18,0 138,0-168,0 143,0-163,0 14,0 (21,0)

9,0 600 71,0-91,0 14,0 (21,0) 66,0-96,0 200 9,0 C Sp 2 C Sp 2 9.0 (13.0) 1100 8,0 (12,0) 300

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Up per rated Control lever deflection degrees	mm min 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	тіп 10	e control Control rod travel mm
max. 9	1100	15,0-18,2	-	-	-	26	300	6,8-7,5	-	-
	1150 1200 1250 1330	10,4-14,8 4,8-10,8 0-6,8					120 250 400 500 700	12,0-14,0 8,0-10,2 2,8-4,3 0,9-2,9		,

Speed regulation At 1130-1145 minum less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever		Control rod stop	Fuel-de charact		Starting fuel delivery		
(Test or	t temperature 40 )	min	ការព 4	cm <sup>2</sup> /1000 strokes 5	min 6	mm RW comexixXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
1100	323,0-327,0 (320,0-330,0)	•	500	238,0-250,0 (235,0-253,0)	100	18,0-18,2 mm RW	
	(320,0-330,07		300	64,0-69,0	300	RW max. 5 mm	

Checking values in brackets

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 22,4 c 4. Edition

RQU 425/1100 ZWA 37 DR

Replaces 2.83 Fire .

Komb.-Nr. 0 406 036 026 1 - 2 - 3 - 4 - 5 - 6

MTU

PE 6 ZWM 14C/120 RS 38/11

0 -45 -120-165-240-285° ± 0,5° (± 0.75°)

Engine . 3 833 Ea 500

Governor adjustement according to VDT-I-420/112 Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test penches and equipment

#### A. Fuel-injection-pump settings

#### 2,0-2,1 mm (from BDC) Port closing at prestroke Spring pre-tension Fuel delivery Difference Control-Fuel delivery Rotational (torque-control valve) Checking values in fuel delivery Average value rod travel speed cm3/1000 strokes cm<sup>1</sup>/1000 strokes cm<sup>3</sup>/1000 strokes mif ' 373,0-378,0 11,0 (16,0) 370,0-381,0 600 18.0 138,0-166,0 14,0 (21,0) 143,0-163,0 9,0 600 66,0-96,0 14,0 (21,0) 71,0-91,0 9,0 200 9.0(14.0)C, Sp. 2 1080 11,0 (16,0) C. Sp. 5 550 12.0 425

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated Control lever deflection degrees	mm min 2	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min 5	cd Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	Torqu min 10	e control Control- rod travel mm 11
max. ca. 58	1100 1150 1200 1250 1350	18,0-18,5 17,6-18,0 13,6-16,2 9,0-12,4 3,6-8,5 0 - 1,0	(Posit			ca. 27	200 350 425 500 1100 1160	1,4-1,8 17,0-18,0 10,0-14,0 6,0-6,4 2,6-4,2 1,4-1,8		-

Torque control travel a =

Speed regulation: At 1130 min<sup>-1</sup> 1 mm less control rod travel

## C. Settings for fuel-injection pump with fitted governor

Full-loa	d delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
(Test or	cm <sup>3</sup> /1000 strokes	min 3	min 4	idle stop cm <sup>3/</sup> 1000 strokes 5	min :	mm RW XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	
1080	352,0-356,0 (349,0-359,0)	••	550	277,0-295,0 (273,0-299,0)	100	18,0-18,2 mm RW	
	(0.3,0 003,0)	Shutoff solenoid 0,5 - 1,5 mm in front of stop	425	Idle 57,C-63,0	High 1220	idle speed RW max. 5 mm	

Checking values in brackets

#### Test specifications Fuel injection pumps and governors

WPP 00i/4 MTU 29,9 d

2. Edition

PE 8 ZWM 140/120 RS 1018/11 RQU 356-500/1050 ZWA 59 DR Komb.-Nr. 0 406 038 021

2.83 Firm MTU

Replaces

Governor adjustement according to VDT-I-420/112

Engine MB 837 Ea

1 - 2 - 6 - 3 - 4 - 5 = 7 - 8 je  $45 \pm 0.5$  ( $\pm 0.75$ )

537 kW (730 PS)

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

A. Fuel-injection-rump settings

2,0-2,1

Rotational	Control-	(1,95-2,15) Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min · i	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm=/1000 strokes	
1	2	3	4	5	
600	18,0	373,0-378,0	11,0 (16,0)	369,0-382,0	-
600	9,0	143,0-163,0	14,0 (21,0)	148,0-168,0 66,0-96,0	
200 1050	9,0	71,0-91,0 C, Sp. 2	14,0 (21,0)	00,0-90,0	
300		C, Sp. 5	9,0		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees 1	mm min	Control- rod travel mm min 3	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm 11
ca. 62	700 1070 1150 1230 1300	18,0 17,6-18,0 9,6-14,0 0,4-7,0 0	ca. 43		6,6-9,1 12,0-17,0 0-4,0 0	ca. 27	100	7,1-8,3 15,3-18,0 12,0-15,7 1,5-5,2 0	5	-

Torque control travel a =

Speed regulation: At 1075-1085 mimiliess control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery irnor control lever temperature 40°)	Control rod stop at speed	\$ 150 EE	Example Control of Con		Starting fuel delivery		
min ,	cm <sup>3</sup> /1000 strokes	min 3	min 4	cm³/1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7		
1050	358,0-362,0	-	300	80,0-90,0	100	18,0-18,2 mm RW		
	(355,0-365,0)					Shutoff solenoid 0,5 - 1,5 mm in front of stop		

Checking values in brackets

#### Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 26,5 a 2. Edition

PE8ZWM 160/120 RS 1032/11

ROUV300-1200 ZWA 51 R

1-2-6-3-4-5-7-8 je 45° · 0,5° (· 0,75°) Komb.-Nr. 0 406 038 022

Note VDT-W 490/305!

Replaces Firm MTu Engine 8 V 331 Hydrofoil

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,5-2,6 Port closing at prestroke (2.45-2.65)

mm (from BDC)

CVI 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-contro!
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min '	mm	cm <sup>3</sup> /1000 strokes	cm 1/1000 strokes	cm 1/1000 strokes	
1	2	3	4	5	
600	18,0	513,0-523,0	16,0(24,0)	510,0-526,0	
600	9,0	140,0-160,0	12,0(18,0)	135,0-165,0	
300	9,0	72,0- 92,0	11,0(16,0)	67,0- 97,0	

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor settings

Upper rated	speed		Medium ra	ted spec	ed	Lower rat	ed speed	d	Torqu	e control
Control lever deflection degrees 1	mm min	Control- rod travel mm min ' 3	Control lever flection degrees 4	min : 5	Control- rod travel mm 6	Control lever de- flection degrees 7	min '	Control- rod travel mm 9	min 10	Control- rod travel mm
ca.84	1200	18,0-19,0	ca.27	375	8,0	ca.21	300	8,0	-	-
ca.84	17,0 4,0 1400	1205-1225 1320-1380 0 - 2,0		200 300 500 720	14,3-17,2 10,3-11,8 2,5-3,7		200 400 590	10,8-14,2 3,9-5,0 0		

Torque control travel a =

Speed regulation At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gov	ad delivery ernor control lever il temperature 40')	Control rod stop at speed		Fuel-delivery characteristics		ng fuel ry 
min ¹	cm <sup>1</sup> /1000 strokes 2	min '	min 1	cm <sup>-</sup> /1000 strokes 5	mın 6	cm·/1000 strokes 7
is ac engin	full-load delive djusted on the ne in accordance the engine ection sheet.	= RW 3,0 nm				

Checking values in brackets

Geschaftsbereich KH. Kundendienst. Kfz Ausrustung.

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#### Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 29,9 f

1. Edition

Replaces

PE 8 ZWM 150/120 RS 1035 RQU 300-500/1100 ZWA 59 DR

Komb.-Nr. 0 406 038 024 1-2-6-3-4-5-7-8 je 45°  $\stackrel{+}{=}$  0,5 ° ( $\stackrel{+}{=}$  0,75°)

Governor adjustement according to VDT-I-420/112

Firm: MTU Engine UB 837 EA -Italien

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump, test benches and equipment

#### A. Fuel-injection-pump settings 2,5-2,6 (2,45-2,65) Port closing at prestroke

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
min '	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm³/1000 strokes	
1	2	3	4	5	
1000	18,0	527,0-537,0	14,0 (21,0)	524,0-540,0	
1000 300	9,0 9,0	175,0-195,0 104,0-124,0	12,0 (18,0) 16,0-(24,0)	170,0-200,0 99,0-129,0	
1100 800 425	12,3 13,2 6,7	Abschn. C	12,0 (18,0) 16,0 (24,0) 12,0		

Adjust the fuel delivery from each outlet according to the values in lacksquare

#### B. Governor settings

ca. 65     800     18,0-18,5     ca. 39     500     7,0     ca. 33     425     6,6-6,9     1100     12,3       11,3     1125-1140     ca. 19     300     7,0     300     13,0-15,0     800     13,1+0       5,0     1189-1215     ca. 19     300     7,0     500     1,0-3,3	Upper rated Control lever deflection degrees	mm mm	Control- rod travel mm mimn.1.	Medium ra Control lever flection degrees 4	min 5	Control-	Lower rat Control lever de- flection degrees 7		t Control- red travel mm 9 *	Torqu min 1	e control Control- rod travel mm 11
0, 1255-1275	ca. 65	1100 11,3 5,0	12,3 1125-1140 1189-1215				ca. 33	300 400 500	13,0-15,0 7,8-9,0 1,0-3,3		

Torque control travel a = 0,2

mm+0.5

Speed regulation. At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on gove	d delivery ernor control lever temperature 40°)	Control rod stop at speed	Fuel-delivery characteristics		Starting fuel delivery		
min '	cm³/1000 strokes 2	min 3	min . 4	cm <sup>3</sup> /1000 strokes 5	min 6	cm <sup>3</sup> /1000 strokes 7	
1100	302,0-308,0 (300,0-310,0		800	331,0-351,0 (326,0-356,0)	425	53,0-59,0	

Checking values in brackets

Testoil-150 4113

# Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 44,3 a

3. Edition

PE 8 ZWM 160/120 RS 2001

RQUV 300-1050 ZWA 65 R

Replace 5.83

Komb.-Nr. 0 406 038 023

1 - 2 - 6 - 3 - 4 - 5 - 7 - 8 je  $45^{\circ} \stackrel{+}{=} 0,5^{\circ} (\stackrel{+}{=} 0,75^{\circ})$ 

Engine: 396-03 960 kW

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,5-2,6Port closing at prestroke (2.45-2.65)

mm (from BDay 1. 8

Rotational	Control-	Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fue! delivery	Checking values	valve)
mın-'	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	
1	2	3	4	5	
1000	18,0	622,0-636,0	20,0 (30,0)	619,0 - 639,0	-
1000	9,0	220,0-248,0	28,0 (42,0)	215,0 - 253,0	
300	9,0	104,0-128,0	\$6,0 (24,0)	99,0 - 133,0	
			1		
		1			
				1	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees	min '	Control- rod Wive 1 mm min 1	Medium ra Control lever flection degrees 4	min '	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	Torqu min 10	e control Control- rod travel mm
ca. 82	1050 17,0 4,0 1250	18,0 1055-1075 1150-1210 0-2,0	ca. 27	375 200 300 500 720	8,0 14,3-17,3 10,3-11,8 1,9-3,7 0		300 200 400 590	8,0 10,8-14,2 3,9-5,0 0	-	-

Torque control travel a =

mm

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on dov	ad delivery ernor control lever	Control rod stop at speed	Fuel-de charact		Starting fuel delivery		
(Test o	cm <sup>2</sup> /1000 strokes	idle stop	min 4	cm <sup>3</sup> /1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
		300 = RW 8,0 mm	-	-	-	-	
The	known full-load deliv the engine in ac engine inspect	very is adjusted cordance with ion sheet.					

Checking values in brackets

#### Test specifications Fuel injection pumps and governors

WPP 001/4 MTU 47,5 a

4. Edition

PE 12 ZWM 160/120 RS 2002

RQUV 300-1050 ZWA 65 R

Replaces MTU

1-2-9-4-5-8-11-2-3-10-7-60-45-60-105-120-165-180-225-240-285-300-345 °  $^+0,5$ °( $^+0,75$ °)

Engine 12 V 396-03 1440 kW

Note VDT-W-400/305

All test specifications apply only to Bosch fuel-injection pump test benches and equipment b.-Nr. 0 406 030 002

#### A. Fuel-injection-pump settings

Port closing a Rotational	Control-	(2.45-2.65)  Fuel delivery	Difference	Fuel delivery	Spring pre-tension (torque-control	
speed	rod travel	Average value cm <sup>3</sup> /1000 strokes	in fuel delivery cm <sup>3</sup> /1000 strokes 4	Checking values cm <sup>3</sup> /1000 strokes 5	valve)	
1000 1000 300	18,0 9,0 9,0	622,0-636,0 220,0-248,0 104,0-128,0	20,0 (30,0) 28,0 (42,0) 16,0 (24,0)	619,0-639,0 215,0-253,0 99,0-133,0		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees		Control- rod 1 mai/8! mm min 3	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rate Control lever de- flection degrees 7		Control- rod travel mm 9		e control Control- rod travel mm
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
	17,0 4,0 1250	1055-1075 1150-1210 0 - 2,0		200 300 500 720	14,3-17, 10,3-11, 1,9-3,7	\$	200 400 590	10,8-14,2 3,9-5,0 0		

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

Full-load delivery on governor control lever		Control rod stop at speed			Fuel-delivery characteristics		Starting fuel delivery	
(Test o	temperature 40 ) cm:/1000 strokes	idle	stop	min. 4	cm#1000 strokes 5	mın 6	cm <sup>3</sup> /1000 strokes 7	
		3	300 RW 8,0 mm					
The on	known full-load deli the engine in a engine inspect	oburdar	nce with					

Checking values in brackets

#### Test specifications Fuel injection pumps and governors En.

WPP 001/4 MTU 23.7 a

720 kW

2. Edition

RQUV 300-1050 ZWA 65 R PE 6 ZWM 160/120 RS 2004

Replaces 4.83 MTU Firm Engine:396-03

Kemb.-Nr. 0 406 036 034 1-2-3-4-5-6

0-45-120-165-240-325 ° + 0,50 (+ 0,75 °)

Note VDT-W-400/305 !
All test specifications apply only to Bosch fuel-injection pump test benches and equipment

#### A. Fuel-injection-pump settings

2,5-2,6

ort closing at	Control-	Fue: delivery	Difference	Fuel delivery	Spring pre-tension (torque-control
speed	rod travel	Average value	in fuel delivery	Checking values	valve)
mių ,	mm	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strokes	cm <sup>3</sup> /1000 strakes	
1	2	3	4	3	
1000	18,0	622,0-636,0	20,0 (30,0)	619,0-639,0	
1000 300	9,0	220,0-248,0 104,0-128,0	28,0 (42,0) 16,0 (24,0)	215,0-253,0 99,0-133,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor settings

Upper rated Control lever deflection degrees		Control- fPH -1 travel mm min 3	Medium ra Control lever flection degrees 4	min 5	ed Control- rod travel mm 6	Lower rat Control lever de- flection degrees 7	min 8	Control- rod travel mm 9	min 10	e control Control- rod travel mm 11
ca. 82	1050	18,0	ca. 27	375	8,0	ca. 21	300	8,0	-	-
		1055-1075 1150-1210 0 - 2,0		200 300 500 720	14,3-17,2 10,3-11,8 1,9-3,7		200 400 590	10,8-14,2 3,9-5,0 0		

Torque control travel a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for fuel-injection pump with fitted governor

on governor control lever		Control rod stop at speed				Starting fuel delivery		
min	cm <sup>3</sup> /1000 strokes	idle stop	min 4	cm <sup>2</sup> /1000 strokes 5	min 6	cm=/1000 strokes 7		
		300 = RW 8,0 mm						
The	known full-load delive he engine in acc engine inspectio	ordance with						

Checking values in brackets

**Test Specifications** Distributor-type Fuel-injection Pumps

WPP 001/4 BMW 2,4 a

1. Edition

Test pressure line

VE 6/10 F 2400 R 121 0 460 406 022

DHK: 1 688 901 022 / 130 bar

company BMW

M 21 D 24-Europa

6x2x450 mm / 1 680 750 073°; Overflow temperature 45° C

All test specifications are valid only for Bosch Fuei-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting	mm			see VDT-W-460/	
1. Settings	Rot speed rev/min	Settings	· <u>· · · · · · · · · · · · · · · · · · </u>	Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1500	4,3-4,7	mm	1,050	
1 2 Supply pump pressure	1500	6,1-6,5	bar (kgf/cm²)	1,050	
1.3 Full-load delivery without	500	28,0-29,0	cm³/1000 strokes	0	3,0
charge-air pressure Full-load delivery with	1500	40,8-41,8	cm <sup>4</sup> /1000 strokes	1,050	2,5
charge-air pressure  1 4 idle speed regulation	400	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	3,0
1 5 Start	250	35,0-36,0	cm <sup>3</sup> /1000 strokes	0	
1 6 Full-foad speed regulation	2600	17,5-23,5	cm <sup>3</sup> /1000 strokes	1,050	
1.7 Load-dependent start of delivery					

= rev/min	500 (*) 1, 500	,1-1,	750 9(0,8-2,2	!)	1000	1500		2300
	500				\ /	(3,8-5)	,2) /,	4-8,2(7,1-8,5
ar (kgf/cm²)	3,2-3,6				I sale entité	and the second section of the second	2300 8,1-8,5	
= rev/min m <sup>3</sup> /10 s			153)				2400 55-138(40	1-153)
The designation of the state of	de transcription comments man					,	3. Dime	nsions for assembly
ot speed	Fuel delivery cm <sup>3</sup> /1000 stro	kes					Designation	and adjustment mm
2700 2600		•	(16,5-24,	5)	1,050	)	к	3,2-3,4
2400 1500	40,6-42	2,6			-		KF	6,3-6,6
** 750 500	34,5-35	5,5			0,250	)	MS	1,5-1,7
				,			\$ <b>V</b> \$	, ,,,
2400	0					• • • •	A .	,
	n3/10 s  ot speed v/min  2700 2600 2400 1500  ** 750 500	= rev/min m³/10 s  55 - 138  out speed Fuel delivery cm³/1000 stro 2700 7,0-13 2600 2400 40,6-42 1500  ** 750 34,5-35 500	55-138(40- ot speed Fuel delivery cm³/1000 strokes 2700 7,0-13,0 2600 2400 40,6-42,6 1500 ** 750 34,5-35,5 500	55-138(40-153)  ot speed Fuel delivery cm <sup>3/1000</sup> strokes  2700 7,0-13,0 (6,0-14, 2600 (16,5-24, 39,4-43, 1500 (39,1-43, 500 (25,5-31, 500 (25,5-31, 500 (25,5-31, 500 (25,5-31, 500 (25,5-31, 500 (25,5-31, 500 (39,1-43, 500 (25,5-31, 500 (25	55-138(40-153)  ot speed Fuel delivery cm <sup>3/1000</sup> strokes  2700 7,0-13,0 (6,0-14,0) 2600 (16,5-24,5) 2400 40,6-42,6 (39,4-43,8) 1500 (39,1-43,5)  ** 750 34,5-35,5 (32,0-38,0) 500 (25,5-31,5)	55-138(40-153)  ot speed Fuel delivery Charge-ai bar (kgf/ci  2700 7,0-13,0 (6,0-14,0) 1,050 2600 (16,5-24,5) 1,050 2400 40,6-42,6 (39,4-43,8) 1,050 1500 (39,1-43,5) 1,050 ** 750 34,5-35,5 (32,0-38,0) 0,250 500 (25,5-31,5) 0	55-138(40-153)  ot speed Fuel delivery Charge-air press bar (kgt/cm²)  2700 7,0-13,0 (6,0-14,0) 1,050 2600 (16,5-24,5) 1,050 2400 40,6-42,6 (39,4-43,8) 1,050 1500 (39,1-43,5) 1,050 ** 750 34,5-35,5 (32,0-38,0) 0,250 500 (25,5-31,5) 0	55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  55-138(40-153)  Charge-air press bar (kgt/cm²)  7,0-13,0

BOSCH

idle stop

End stop

2.4 Solenoid

400

475

100

400 480

max. cut-in voltage

max. 3,0

26,5-36,5

31,5-41,5 25,2-29,8

xxx min. 10 V

10.83

Observations hydr. cold-

\_ tions on sheet 2.

\*\*Correction at the

adjusting nut (46).

start accelerator:

Please note instruc-

(4.0-12.0)

\* Test hydr. cold-start accelerator:

Apply 12 V to magnet of hydr. cold-start accelerator. 500 1/min 1.9 - 2.9 (1.7-3.1) 1000 1/min 3.7 - 4.7 (3.5-4.9)

\*\* Manifold-pressure compensator stroke = 4.3 mm

En

WPP 001/4 HAN 3,1 e 2

2. Edition

En

estoil-ISO 4113

VA 6/100 H 1300 BR 54-3 O 46O 306 10O supersedes 6.82

company Hanomag
D 162 R-92 PS

O,3

Pre-stroke setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VOT-WPP 161/4 B

1	. Settings	rev/min	Settings		Charge air oress kp/cm	Difference in delivery cm <sup>3</sup>
1 1	Timing device travel	900	3,0-4,0	mm		
:	Supply pump pressure	900	4,7-5,2	kp/cm <sup>4</sup>		
	Full-load delivery without	1100	57,0-58,0	cm <sup>3</sup> /1000 strokes		2,5
	charge-air pressure Full-load delivery with charge-air	-	-	cm <sup>1</sup> /1000 strokes		
14	pressure I idle speed regulation	300	12,0-18,0	cm <sup>3</sup> /1000 strokes		3,0
1 1 5	s Start (mech.)	100	mind.65,0	cm <sup>4</sup> /1000 strokes	•	
16	6 Full-load speed regulation	1430	38,5-46,5	cm <sup>3</sup> /1000 strokes	1	

2. Test Sp	ecificat	IONS Checking values in bracket		4000 4450
2.1 Timing device	rev/min	580-730 (550-760)	900	1000-1150
	നന	Beginn	(2,7-4,3)	4,7-5,4 (4,4-5,7)
22 Supply pump	rev/min kp/cm²	100 1,1-1,6 (0,9-1,8)	900 (4,5-5,4)	1300 5,9-6,4 (5,7-6,6)
Overflow delivery	rev/min cm³/10 s	500 mind. 25	1000 55-125 (40-140)	

23	Fuel	deliveries
----	------	------------

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes		Charge air pressure kp/cm
End stop	Full	1480-1530 (1460-1550)	0		
		1430	. 50 0 64 0	(37,5-47,5)	
1	) : :	1300	58,0-01,0	(57,0-62,0) (56,5-58,5)	
	;	500	50,0-53,0	(56,5-58,5) (49,0-54,0)	
			i		; !
	Stop	1300	0		
Idle stop	Full	450-570	0		
		(430-590) 300	!	(11,0-19,0)	
	: Start	100	mind. 65,0	)	
End stop	1	mind. 150	:		

Angle to the stop-plate	Pre-setting dimensions
Pump a = 25 ± 4° b = 40 ± 8° c = 30 - 8° c = 60 ± 8°	Pump Dimension IV = 6,0 mm (s.a.BMP 161/32) Dimension V = - mm

WPP 001/4 IHC 4,4 d 1

2. Edition

En

S-101-130 4113

6.82 Supersedes CA 4/11 H 1250 CR 93-2 Company IHC engine D 268/510

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuei Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

Pre-stroke setting 0.5 mm
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

	1.	Settings	rev/min	· Settings		Charge-air press kp/cm <sup>-</sup>	Difference in delivery
,	1 1	Timing device travel	1000	6,1-6,7	mm		-
		Supply pump pressure	1000	5,5-6,0	ko/cm*		
<b>]</b> ,		Full-load delivery without	800	80,5-81,5	cm <sup>3</sup> /1000 strokes		2,5
į		charge-air pressure Full-load delivery with charge-air	-	-	cm <sup>-1</sup> /1000 strokes		
		pressure	: 400	12,0-18,0	om mode snoke v		3,0
į 1	4	idle speed regulation		-	cm 1/1000 strokes		-,-
1 1	5	Start	100	mind. 95,0	cm³/1000 strokes		
1	6	Full-load speed regulation	1330	34,0-42,0	cin /1000 strokes		

2. Test Sp	ecification	ONS Checking values in brackets		entermanus de entre de la companio de la companio de la companio de la companio de la companio de la companio d
2.1 Timing device	rev/min	500	1000	1250
	mm	0,5-1,5 (0,3-1,7)	(5,9-6,9)	7,0-7,7 (6,8-7,9)
		200	1000	1250
2.2 Supply pump	rev/min	1,5-2,0 (1,3-2,2)	(5,3-6,2)	6,2-6,7 (6,0-6,9)
	kp/cm²		• • • •	
O configuration of the configu		500		1250
Overflow delivery	rev/min	55-100 (40-110)		√ 55-100 (40-110)
	cm <sup>3</sup> /10 s	33-100 (40-110)		( 33-100 (40-110)

23	Fuel	deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes		Charge-air pressure kp/cm <sup>2</sup>
End stop	Full	1400-1450	0		
		1330	:	(33,0-43,0)	
		1200	84,5-87,5	(83,5-88,5)	
		800		(80,0-82,0) (77,0-83,0)	
		500	78,0-82,0	(77,0-83,0)	
					i
		1250	0		<b>1</b>
	Stop				1
		470-520	0		\$
idle stop	Full	470-520			
		400		(11,0-19,0)	
5.4.5555	Start	100	mind. 95,0		
End stop					
2000	1	1	1	•	i

Angle to the stop-plate		Pre-setting dimensions
Pump α β	= 25 ± 4° = 36 ± 3° = 30 - 8° = 60 ± 8°	Pump Dimension IV = - MiM Dimension V = - MiM

WPP 001/4 FIA 2,6 c

4. Edition

VA 3/11 H 1200 CL 134-9 0 460 313 019

6.82 Fiat 8035-04265

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment

VDT-WPP 161/4 B

O,7 ±0,02 (±0,04)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

1. Settings	rev/min	Settings		Charge air press kp/cm	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	800	4,1-5,1	mm		
1.2 Supply pump pressure	800	4,8-5,3	kp/cm·		
1.3 Full-load delivery without	800	68,0-69,0	cm <sup>3</sup> /1000 strakes		2,5
charge air pressure Full-load delivery with charge air	-	-	cm 1/1000 strokes		
pressure  1.4 Idle speed regulation	300	17,0-23,0	cm <sup>3</sup> /1000 strokes		3,0
	10	mind.120,	0 cm³/1000 strokes		
1.5 Start  1.6 Full-load speed regulation	130	36,0-44,0			

2. Test Sp	ecificatio	ns Checking values Beginn 330–430 1	8-2.8(1.6-3.0	800 105 1)(3.9 <b>-</b> 5.3) 6.	50 1100-1230 ,9-7,9(6,7.7,1)9,0-9,6
	mm	. 550-450 1,	0-2,0(1,0-0,0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	(8,8-9,3)
2 2 Supply pump Overflow delivery	rev/min	200 1,7-2,1(1,5 500 55-100(40-1	80 (4,6- (10)		1200 6,6-7,1(6,4-7,3) 1200 55-100(40-110)
	cm <sup>3</sup> /10 s				ه الله الله الله الله الله و الله و الله و الله الله
23 Fuel deliveries					
Speed control lever	Delivery lever	rev/min	cm <sup>3</sup> /1000 strokes		Charge-air pressure kp/cm
End stop	Full	1360-1410	0		
		1300 1250-1270 1200 800 500	Beginn 61,0-64,0 62,5-66,5	(35,0-45,0) (60,0-65,0) (67,5-69,5) (61,5-67,5)	
	Stop	1200	0		
idle stop	Full	340-400	0		,
		300		(16,0-24,0)	
	Start	100	mind.120,0		
End stop	Start	110-230			:

Angle to the stop-plate	Pre-setting dimensions
Pump a = 25 ± 4° B = 45 ± 8° v = 30 - 8° b = 60 + 8°	Pump Dimension IV 3,80 mm Dimension V= 24,65 mm

46

WPP 001/4 FIA 3,5c 3. Edition

Ξn

Testoil-ISO 4113

/A 4/110 H 1250 CL 136-8 D 460 314 038

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Pre-stroke setting 0.5 mm ± 0.02 (± 0.04)
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

company Fiat engine 8045 sembly 66 P

engine 8045-02270 66 PS All test specifications are valid for

supersedes 82

All test specifications are valid for Bosch Fuel injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

	eracion co oucice in	•				
1	. Settings	rev/min	Settings		Charge-air press kp/cm:	Difference in delivery cm. <sup>1</sup>
i 1	Timing device travel	1000	5,3-6,3	നന		
1 2	Supply pumb pressure	1000	5,3-5,8	kp/cm <sup>r</sup>		
1 3	Full-load delivery without charge-air pressure	800	67,5-68,5	cm <sup>1</sup> /1000 strokes		2,5
	Full-load delivery with charge-air	-	-	cm <sup>3</sup> /1000 strokes		
14	pressure I idle speed regulation	300	22,0-28,0	cm <sup>3</sup> /1000 strokes		3,0
15	Start	100	mind. 110,0	r/m³/1000 strokes		
: ! 16	6 Full-load speed regulation	1400	26,0-34,0	cm - 1000 strokes	: i	

2. Test Sp	ecificati	ONS Checking values in brackets		
2.1 Timing device	rev/min	700	1000	1250
	mm	2,4-3,2 (2,1-3,5)	(5,1-6,5)	6,0-6,7 (5,6-7,0)
22 Supply pump	rev/min	200	1000	1250
z z odppry pomb	kp/cm²	1,5-2,0 (1,3-1,8)	(5,1-6,0)	6,2-6,7 (6,0-6,9)
Overflow delivery	rev/min	500		1250
	cm <sup>3</sup> /10 s	55-100 (40-110)	55-10	00 (40-110)

23	Fuel	deliveries
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Speed control lever	Delivery lever	frev/min	cm <sup>3</sup> /1000 strokes	± (	Charge-air pressure kp/cm <sup>-</sup>
End stop	Fuli	1450~1500 1400 1250 800 500		(25,0-35,0) (64,5-69,5) (66,5-69,5) (58,0-63,0)	
	Stop	1250	0		
Idle stop	Full	400-450 300 100	0 mind_ 110	(21,0-29,0) ,0	
End stop		110-230			

Angle to the stop-plate	Pre-setting dimensions
Pumb $a = 25 \pm 4^{\circ}$ $B = 35 \pm 8^{\circ}$ $A = 30 - 8^{\circ}$ $A = 60 + 8^{\circ}$	Pump Dimension IV = 3,00 mm Dimension V = 24,65 mm

WPP 001/4 FIA 5,5 n

1. Edition

restoiliso 411

VA 6/11 H 1200 CR 185-4 company 8065-02 0 460 316 042

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

Pre-stroke setting of the pointer at a stroke of 1 mm in

All test specifications are valid for Bosch Fuel injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT WPP 161 4 8

relation to outlet "A".					se side
' rev'min		Settings		Charge-air press	Difference in delivery cm <sup>2</sup>
9	00	5,9-6,7	nm		
9	00	5,0-5,5	kp/cm <sup>-</sup>		
9	00	68,0-69,0	cm³/1000 strokes		3,0
	-	-	cm 1/1000 strokes		
3	350	12,0-18,0	cm <sup>1</sup> /1000 strokes		3,0
1	100	min.90,0	cm³/1000 strokes		
13	300	22,0-30,0	cm /1000 strokes		
	rev/min 9	111.	900 5,9-6,7 900 5,0-5,5 900 68,0-69,0	900 5,9-6,7 mm 900 5,0-5,5 kp/cm 900 68,0-69,0 cm <sup>1</sup> /1000 strokes cm <sup>1</sup> /1000 strokes 100 min.90,0 cm <sup>1</sup> /1000 strokes	Settings   Charge-air press   Charge-air press   Charge-air press   Kp/cm    900   5,9-6,7   mm   900   5,0-5,5   kp/cm    900   68,0-69,0   cm <sup>3</sup> /1000 strokes   -   cm <sup>3</sup> /1000 strokes   350   12,0-18,0   cm <sup>3</sup> /1000 strokes   100   min.90,0   cm <sup>3</sup> /1000 strokes

2. Test Sp	ecificati	ONS Checking values in brackets		
2.1 Timing device	rev/min	500 1,5-2,3(1,2-2,6)	900 (5,6-7,0)	
2.2 Supply pump	kp/cm;	200 1,4-1,9(1,2-2,1)	900 (4,8-5,7)	1200 6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500 55-100(40-110)		1200 55-100(40-110)

. 23 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm1/1000 strokes	Charge air oressure ko/cm
End stop	Full	1330-1380	0	the photograph of the decrease and the second of the photograph of
		1300 1180 900 500	•	(21,0-31,0) (59,5-64,5) (67,5-69,3) (52,0-57,0)
	Stop	:	:	
idle stop	Full	350 440-490	0	(11,0-19,0)
End stop	Start	100 110-230	min. 90,0	

Angle to the stop-plate	Pre-setting dimensions
Pump $a = 25 \pm 4^{\circ}$ $a = 54 \pm 8^{\circ}$ $a = 30 - 8^{\circ}$ $a = 60 + 8^{\circ}$	Pump  Dimension ≠ 1,0 mm  Dimension ► 24,65 mm

46

WPP 001/4 FIA 3,6 a

4. Edition

Testoil-ISO 4113

VA 4/110 H 1600 CR 190
0 460 314 033
Supersedes 6.82
Fiat
company 8040.04

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

0.5  $^{\pm}$  0.02  $(^{\pm}$  0.04) Prosettifign of the position at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT-WPP 161/4 B

1. Settings	revimin	'Settings		Charge-air press kprcm	Difference in delivery cm."
1.1 Timing device travel	1000	4,6-5,4	mm		And the same of th
1.2 Supply pump pressure	1000	5,2-5,7	kp/cm²	•	
1.3 Full-load delivery without charge-air pressure	700	67,0-68,0	cm <sup>3</sup> /1000 strokes		2,5
Full-load delivery with charge-air pressure	-	-	cm 1/1000 strokes	1	
1.4 Idle speed regulation	300	9,0-15,0	cm <sup>1/1000</sup> strokes	i !	3,0
1.5 Start	100	mind. 110,0	cm 11000 strokes	•	1
16 Full-load speed regulation	1750	41,0-49,0	cm /1000 strokes	***	•

2. Test Sp	rev/min	ONS Checking values in bracke 700	1000	1400	1600
•	mm	1,5-2,5(1,3-2,7) (	4,3-5,7) 8,0-9	,0(7,8-9,2)	8,9-9,6(8,5-9,9
22 Supply pump	rev/min	400 2,2-2,7 (2,0-2,9)	1000 (5,0-5,9)		1600 8,6 (7,9-8,8)
Overflow delivery	rev/min cm <sup>3</sup> /10 s	500 55-100 (40-110)		1600 55-100 (40	-110)

23	Fuel	deliveries
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Speed control lever	Delivery lever	revimin	cm <sup>1</sup> /1000 strokes	Charge-air pressure kp/cm:
End stop	Full	1900-2000 1750 1600 1000 700 500	0 (40,0-50,0 59,5-62,5 (58,5-63,5) 67,0-70,0 (66,0-71,0) × (66,5-68,5) 56,5-59,5 (55,5-60,5)	
	Stop	1600	0	
idle stop	Full	330-380	0	
		300	(8,0-16,0)	
End stop	Start	100 300-400	mind. 110,0	1

Angle to	Angle to the stop-plate		Pre-setting dimensions
Pump o B	=	25 ± 4° 50 ± 8° 30 - 8°	Pump Dimension IV 5,2 mm Dimension V 24,65 mm
•		60 + 8°	

3. Edition

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4	<i>a</i> ;	ı

Pre-stroke setting

superseded.31 VA 3/10 H 1200 CR 411 companySteyr engine WO 311.40 0 460 303 158

Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

 $0.5 \text{ mm} \pm 0.02 (\pm 0.04)$ 

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers Test Intructions and Test Equipment VDT WPP \*61.4 B

1.	Settings	tevimin	Settings		Charge-air press	Difference in delivery cm
1 1	Timing device travel	1000	5,6-6,6	mm		
	•	1000	4,9-5,3	kp/cm <sup>-</sup>		
	Supply pump pressure	1150	65,5-66,5	cm <sup>1</sup> /1000 strokes		2,5
٠ ٠	Full load delivery without charge-air pressure	-	-	em i 1000 strokes		
	Full load delivery with charge-air pressure	300	12,0-18,0			3,0
1.4	idle speed regulation	100	mind. 70,0	om //1000 strokes		
15	Start	1300	36,0-44,0	cm1 1000 strakes		
16	Full load speed regulation	1300	30,0-44,0	om 1000 strokes		

2. Test Sp	ecificati	ONS Checking vali	ues in prackets 700	1000
2.1 Timing device	um tea/wiu	Beginn	2,7-3,7 (2,4-4,0)	(5,4-6,8)
2.2 Supply pump	revimin	200 1,2 <b>-</b> 1,6 (1	1000 ,0-1,8) (4,7-5,5)	1200 5,6-6,0 (5,4-6,2)
Overflow delivery	rev/min	500 55-100 (4	0-110)	1200 55-100 (40-110)
	cm**10 s			and the second of the second o

2.3	Fuel	deliveries

Speed control lever	Delivery lever	rev/min	cm <sup>1/</sup> 1000 strokes		Charge air pressure kp/cm
End stop	Fuil	1360-1410	0		
:		1300 1150 1000 500	68,5-70,5 54,5-57,5	(35,0-45,0) (65,0-67,0) (67,5-71,5) (53,5-58,5)	
<u>;</u>	, Stop	1200	0		:
idle stop	Full	380-430	0		
		300	· !	(11,0-19,0)	
End stop	Start	100 170-250	mind. 70,0		

nsion IV = 2,70 mm nsion V = 24,65 mm
•

WPP 001/4 PER 5,8 c 2

3. Edition

VE 6/12 F 1300 L 21-3

0 460 426 022

Overflow temperature 45° C DHK: 1 688 901 020

companyPerkins T 6.354.4

see VDT-W-460/

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting				
1. Settings	Rot. speed rev/min	Settings	Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
A A Times days town	800	3,8-4,2 <sub>mm</sub>	0,8	
1 1 Timing device travel	800	4,4-5,0 ber (kgf/cm²)	0,8	Ì
1 2 Supply-pump pressure	1000	99,5-100,5 cm <sup>3/1000 stroke</sup>	0,8	3,5
1 3 Full-load delivery with charge-air pressure	500	72,0-73,0 cm3/1000 stroke	0	
Full-load delivery without charge-air pressure	270	8,0-12,0 cm <sup>3</sup> /1000 stroke	s 0	3,5
1.4 idle regulation 1.5 Full-speed regulation	1480	47,0-53,0 cm3/1000 stroke	, 0,8	:
1 6 Start	100	min. 90,0 cm <sup>3/1000</sup> stroke	os 0	:
1.7 Load-dependent port-closing		•		; }

2. Test Spec	ifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	500	800	1300
LDA=0.8 bar	mm	0,9-1,7(0,6-2,0)	(3,3-4,7)	4,6-5,3(4,2-5,6)
22Supply pump	n = rev/min	500		1300
LDA=0,8 bar	bar (kgf/cm²)	3,1-3,7		6,4-7,0
Overflow delivery	n = rev/min	500	1300 (0,8	
	cm²/10 s	55-138(40-153)	55-138(40-153)	
	1			

2.3 Fuel delivenes		3. Dimensions			
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	and adjustment mm
End stop	1650 1550	max. 1,0 7,0-15,0 ( 6,0-16,0	0,8	. <b>K</b>	3,2-3,4
i	1480	(45,0-55,0		KF	5,1-5,3
	1300	91,0-94,0 (87,5-97,5 (97,0-103,	) 0,8	MS	0,9-1,1 max.6,0
	*700 500	80,5-81,5 (77,2-84,8 (68,7-76,3	0,2 3) 0	SVS	
				×χκ	20,2-22,2
switch-off	1300	0		eχΓ	11,7-15,1

idle stop	:	400 320 270	max. 1.0 min. 1,0 (5,0-15,0)	Manifold-pressure compensator stroke
End stop	i ;	120 250	min. 90,0 max. 74,0	<pre>= 4,5 mm Correction at the adjusting nut. (46)</pre>

xxx min. 10 V 2.4 Solenoid max. cut-in voltage rated voltage 12V

WPP 001/4 REN 2,0 b

2. Edition

En

VE 4/9 F 2250 R 41

supersedes company 852

test specifications are	valid only for Bo	sch Fuel-injection Pump T	est Benches and Teste	ers	Test Instructions at see VDT-W-460/	nd Test Equipment
e-stroke setting		Rot speed	Settings		Charge-air press	Difference in delivery cm <sup>3</sup>
. Settings		revimin	A A A 9		bar (kgf/cm²)	Denter & City
1.1 Timing device trav	el	1400	4,4-4,8	mm		
1 2 Supply-pump pres	sure	1400	4,9-5,5	bar (kgf/cm²)		2 5 (2 0)
1 3 Full-load delivery		1400	39,0-40,0	r/m3/1000 strokes		2,5 (3,0)
charge-air pressur	е			cm <sup>3</sup> /1000 strokes		
Full-load delivery charge-air pressur		400	7,5-11,5	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
1 4 Idle regulation		2400	17,0-23,0	cm³/10G0 strokes		
1 5 Full-speed regulat	lion	_		cm <sup>3</sup> /1000 strokes		
1 6 Start		100	min. 52,0	GIII-7 1000 3110 A03		
1.7 Load-dependent	port-closing	1400				
2. Test Spec	cification	S checking values in br	ackets ( )			
	n = rev/min	1000		1400		2000
2 1 Timing device	. mm	2,6-3,4 (2	2,3-3,7)	(3,9-5,3)	6,7-7,	5 (6,4-7,8)
	n = rev/min	1000			2000	
2 2 Supply pump	bar (kgf/cm²)	3,9-4,5			6,5-7,1	
		500			2250	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110 (4	0-125)	55	-110 (40-12	25)
					3. Dimer	sions
2.3 Fuel delivenes						for assembly and adjustment
Speed control lever	; Rot speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press oar (kgf/cm²)	Designation	mm 
End stop	2550	max. 2,0			.4	
2.10 310 2	2400	_	(16,0-24,0)		К	3,2-3,4
	2200	31,5-33,5	(30,2-34,8)	)	KF	5,7-5,9
	2100	32,5-34,5	(31,2-35,8 (37,2-41,8	) \	MS	1,4-1,6
	1400 1000	35.5-38.5			svs	max. 3,5
	1000	33,3430,0	(3.,0,0	,		
			ه د د سیده است. ماند ساله د ساله محمد بیشد د در پیشم د		A XK	20,1-22
switch-off	2250	0				9,5-13
					a XL	7,0-13
idle stop		E O	and and the second seco		Observations	
	650 400	max. 5,0	(5,5-13,5)			
	400		(0,0 ,0,0)			
End stop	320	min. 45,0				
L-19 2 YTT	430	max. 45,0				

BOSCH

2.4 Solenoid

xxx min. 10.0 V rated voltage 12V.

WPP 001/4 REN 2,0 d

3. Edition

VE 4/9 F 2200 R 69

0 460 494 055

Pre-stroke setting

Overriow temperature 45° C

supersedes 3.83 company Renault J 8 S - 702

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers mm

Test Instructions and Test Equipment

see VDT-W-460/.

1. Settings	: Rot. speed rev/min	Śettings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
,	1400	3,9-4,3	mm	0,74		
1.1 Timing device travel	1400	5,1-5,7	bar (kgf/cm²)	0,74		
1 2 Supply-pump pressure	600	35,0-36,0	cm <sup>3</sup> /1000 strokes	0		1
1.3 Full-load delivery with charge-air pressure	1400	50,0-51,5	cm <sup>3</sup> /1000 strokes	0,74	2,5 (3,0)	
Full-load delivery without charge-air pressure	350	9,0-13,0	cm <sup>3</sup> /1000 strokes	0	2,5 (3,0)	
1.4 Idle regulation	2400	23,0-29,0	cm <sup>3</sup> /1000 strokes	0,74		
1 5 Full-speed regulation 1 6 Start	100	min.60,0	cm <sup>3</sup> /1000 strokes	. 0		
1 7 Load-dependent port-closing	**	-		:		

2. Test Spe	cifications	checking values in brackets (	1400	4000	2000
2.1 Timing device	n = rev/min	1000 1,8-2,6(1,5-2,9)	1400 (3,4-4,8)	1890 5,6-6,4(5,3-6,7)	
2 2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,9-2,5		1800 6,3-6,9	1
Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-153)	•	55-	2200 138(40-153)
				3 Dime	nsions

2.3 Fuel deirvenes				3. Dimens	for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgt/cm/)	Designation	mm
End stop	2700 2500	max. 2,0 max.17,5 (22,0-30,0)	0,74 0,74 0,74	K	3,2-3,4 5,7-5,9
	2400 2000 1400	42,5-44,5 (41,2-45,8) (48,2-52,8)	0,74 0,74	MS	1,4-1,6
	1000 700	45,0-48,0 (43,5-49,5) 40,0-41,0 /37,5-43,5)	0,74	svs	max.5,3
	600	(32,5-38,5)	· 0		
switch-off	2200			<b>^</b> %K ØX L	20,2-22,2

2.4 Solenoid	max. cut-in vo	mage XXX m	in. 10,0 V age 12V.		
End stop	180 300	min. 40 max. 40			; ! !
Idle stop	480 375 350	max.2,0 4,0-8,0	(2,0-10,0) (7,0-15,0)	: :	:

Observations

BOSCH

46

WPP 001/4 PEU 2,5 a

1. Edition

VE 4/9 F 2250 R 84 0 460 494 079

Test pressure line 6x2x450 mm / 1 680 750 073

company: Peugect engine: XD 3

DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

	Rot. speed	. Ŝettings		Charge-air press.	Difference in	
1. Settings	rev/min			bar (kgf/cm²)	, delivery cm <sup>3</sup>	
	1500	5,4-5,8	mm			
1.1 Timing device travel	1500	5,5-6,1	bar (kgf/cm²)			
1.2 Supply-pump pressure	1500	37,5-38,5	cm <sup>3</sup> /1000 strokes	•	2,5 (3,0)	
1 3 Full-load delivery with charge-air pressure Full-load delivery without	-	•	cm <sup>3</sup> /1000 strokes			
charge-air pressure  1 4 Idle regulation	400	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,5 (3,0)	
1.5 Full-speed regulation	2325	23,5-29,5	cm <sup>3</sup> /1000 strokes			
1.6 Start	100	min. 45	cm <sup>3</sup> /1009 strokes			
1 7 Load-dependent port-closing	-	-			•	

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min	700	1000 2,5-3,1(2,1-	1500 -3,5)(4,9-6,3)8,1-	2000 8,9(7,8-9,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,1-2,7		2200 7,5-8,1	
Overflow delivery n = rev/min cm <sup>3</sup> /10 s		400 55-138 (40-153)		2250 55-138 (40-15	3)
					•

2.3 Fuel delivenes				J. Dillion	tor assembly
Speed control lever	: Rot. speed : rev/min	Fuel delivery	Charge-air press bar (kgf/cm/)	Designation	and adjustment mm
End stop	2550	max. 2,0			77. 4
C:10 310P	2450	4,0-12,0 (4,0-12,0)		K	K 1
	2325	(22,5-30,5)		KF	5,2-5,4
	2200	39,6-41,6(38,3-42,9)			
	2000	38,9-40,9(37,6-42,2)		MS	0,9-1,2
	1500	(35,7-40,3)		svs	3,3 🌤
	1000	37,1-39,7(35,4-41,4)			
	600	36,3-39,3(34,8-40,8)			
				A	
switch-off					

idle stop	400	(4,0~12,0)	Observations
	440	max. 2,0	
End stop	350	min. 45	
	450	max. 45	

2.4 Solenoid max cut-in voltage XXX min. 10 V

**BOSCH** 

46

WPP 001/4 STE 4,0 f

2. Edition

VE 4/11 F 1200 R 94

1.7 Load-dependent port-closing

0 460 414 003

Overflow temperature 45° C

supersedes company Steyr engine WD 411.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

100

Test Instructions and Test Equipment

Pre-stroke setting	mm see VDT-W-460/.					
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
	1000	4,8-5,2	mm		:	
1.1 Timing device travel	1000	5,6-6,2	bar (kgf/cm²)		1	
1 2 Supply-pump pressure			cm <sup>3</sup> /1000 strokes		;	
1 3 Full-load delivery with charge-air pressure     Full-load delivery without	1180	65,5-66,5	cm³/1000 strokes		3,5(4,0)	
charge-air pressure	300	18,0-22,0	cm <sup>3</sup> /1000 strokes		3,5(4,0)	
1.5 Full-speed regulation	1300	9,5-15,5	cm <sup>3</sup> /1000 strokes		1	

min. 80,0

cm<sup>3</sup>/1000 strokes

2. Test Spe	cifications	checking values in brackets (	)	
2.1 Timing device	n = rev/min	600	1000 (4,3-5,7)	1180 6,3-7,1(6,0-7,4)
2.2 Supply 15 (mp	n = rev/min bar (kgf/cm²)	500 3,0-3,6		1180 6,6-7,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1200 55-138(40-153)

2.3 Fuel delivenes				3. Dimei	tor assembly and adjustment	
Speed control lever	; Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgt/cm²)	Designation	mm	
End stop	1370 1320	max. 1,0 min. 1,5		к	3,2-3,4	
	1300	( )	,0-17,0)	KF	5,2-5,4	
:	1180 1000	63,0-65,0 (60	,4-68,6) ,6-67,4)	MS	0,9-1,1	
i	500	56,0-59,0 (54	,1-60,9)	svs	max.3,0	
	,					

switch-off	1200	0	»L	20,2-22,2
idle stop	410 350 300	max. 1,0 min. 1,5 (15,5-24,5)	Observations	
End stop	170 250	min. 80,0 max. 60,0		
2.4 Solenoid	max. cut-in voli	age XXX min. 10 V xx rated voltage 12V.	· ·	

#### 6

# Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 STE 6,5 a

2. Edition

VE 6/11 F 1300 R 98

0 460 416 021

Occupation catting

Overflow temperature 45° C

supersedes Steyr company WD 612.01 engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

	-	see VDT-W-460/
mm		266 401.44 400

1. Settings	Rot. speed	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1. 96(11.30	1000	2,4-2,6	mm	<del> </del>	
1.1 Timing device travel	1000	6,1-6,7		, ,	
1.2 Supply-pump pressure		;	bar (kgf/cm²)	† †	
1.3 Full-load delivery with			cm³/1000 strokes		
charge-air pressure	1280	65,0-66,0	cm³/1000 strokes		3,5(4,0)
Full-load delivery without charge-air pressure	300	14,0-18,0	cm³/1000 strokes	;	3,5(4,0)
1.4 Idle regulation	1450	18,0-24,0	cm³/1000 strokes	:	
1.5 Full-speed regulation	100	min. 95,0	cm <sup>3</sup> /1000 strokes		
1 6 Start	_	-	5 · · · · · · · · · · · · · · · · ·		
1.7 Load-dependent port-closing				•	

2. Test Spec	Sincations	checking values in brackets (	1000		1280
2.1 Timing device	n = rev/min mm	0,6-1,4(0,3-1,7)	(1,9-3,3)	3,6-4,4(3,3-4	
2 2 Supply pump	n = rev/min bar (kgf/cm²)	300 3,4-4,0		1300 7,2-7,8	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-153)		1300 55-138(40-153)	
2.3 Fuel delivenes		:		3. Dimer	ior assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)	Designation	mm
End stop	1550 1500	max. 1,0 min. 1,5		к	3,2-3,4
	1450 1280	(16,5-25,5 (62,9-68,1	5) 1)	KF	5,4-5,6 1,3-1,5
	1000	72,0-74,0 (69,6-76,4 68,5-72,5 (67,1-73,9	1)	MS	max.6,0
	500	08,5-72,5 (07,1-75,5		SVS	
	1300	0	:	ğκ	20,2-22,2
swiich-off	1300	1		ΚL	8,7-12,0
idle Stop	430 360 300	max. 1,0 min. 1,5 (:1,5-20,5	5)	Observations	
End stop	170 250	min. 95,0 max. 73,0	. !	:	
2.4 Solenoid	max. cut-in voltage	XXX min. 10V		; 	

resexpression rated voltage 12V.

46

WPP 001/4 IBE 4,0a 2. Edition

n

VE 4/12 F 1300 R 103

supersedes company:

engine

Iberica T 4.236

0 460 424 004

Overflow temperature 45° C

Test Instructions and Test Equipment

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

see VDT-W-460/

0,3

1. Settings	Rot. speed	Settings		Charge-air press.	Difference in delivery cm <sup>3</sup>
	1000	4,0-4,4	mm	0,8	
1.1 Timing device travel	1000	5,5-6,1	bar (kgf/cm²)	0,8	
1.2 Supply-pump pressure	500	66,0-67,0	cm <sup>3</sup> /1000 strokes		
1.3 Full-load delivery with charge-air pressure	800	94,0-95,0	cm³/1000 strokes	0,8	4,0 (4,5)
Full-load delivery without charge-air pressure	300	6,0-12,0	cm <sup>3</sup> /1000 strokes	0	3,5 (4,5)
1.4 Idle regulation	1400	64,0-72,0	cm <sup>3</sup> /1000 strokes	0,8	
1.5 Full-speed regulation	100	min. 70,0	cm <sup>3</sup> /1000 strokes	0	
1.6 Start	1				
1.7 Load-dependent port-closing	-	-		<u> </u>	

2. Test Spe	cifications	checking values in brackets (	1000	1300
21 Timing device UA=U,8 Dar	n = rev/min	0,4-1,2(0,1-1,5)	(3,5-4,9)	5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min	500 3,3-3,9		1300 6,7-7,3
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-110(40-125)		1300 55-110(40-125)

	Cm-/10 S				
2.3 Fuel delivenes				3. Dimer	and adjustment
Speed control lever	Rot. speed	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	1640 1580 1400 1300 800 *800 500	max. 1,0 max. 5,0 (63,0-73,0 84,5-87,5(83,0-89,0 (91,5-97,0 91,0-92,0(87,7-95,0 (62,7-70,0	0) 0,8 5) 0,8 3) 0,42	K KF MS SVS	5,1-5,4 1,1-1,35 5,0
	i .		and the second s	χĸ	20,2-22,2
switch-off		: : : :		exL	8,6-11,9
idle stop	430 370 300	max. i,0 max. 3,0 (4,0-14,0	))		ld-pressure sator stroke
End stop	110 210	min. 70,0 max. 70,0		= 4,2 Correc	
2.4 Solenoid	max cut-in vo	wated unitage 17V			

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1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
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WPP 001/4 STE 6,5 d

2. Edition

VE 6/12 F 1100 R 122

0 460 426 029

Overflow temperature 45° C

01.83 supersedes Steyr company WD 612.87 engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting	mm					
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
	800	4,8-5,2	mm			
1.1 Timing device travel 1.2 Supply-pump pressure	800	5,8-6,4	bar (kgf/cm²)			
1.3 Full-load delivery with	:		cm <sup>3</sup> /1000 strokes	· · · · · · · · · · · · · · · · · · ·		
charge-air pressure	1080	80,8-81,8	cm <sup>3</sup> /1000 strokes		3 <b>,5</b>	
Full-load delivery without charge-air pressure	300	14,0-18,0	cm <sup>3</sup> /1000 strokes		3,5	:
1.4 Idle regulation	1200	11,0-17,0	cm <sup>3</sup> /1000 strokes	•		
1.5 Full-speed regulation	100	min. 95,0	cm <sup>3</sup> /1000 strokes		:	
1.6 Start	100		CHI-11000 SHOKES			
1.7 Load-dependent port-closing						

2. Test Spe	cifications	checking values in brackets (	)	
2 1 Timing device	n = rev/min	500 1,3-2,1(1,0-2,4)	800 (4,3-5,7)	1080 6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	500 4,3-4,9		1080 7,2-7,8
Overflow delivery	n = rev/min cm³/10 s	500 55-138(40-153)	•	1100 55-138(40-153
				a Dimensions

	cm <sup>3</sup> /10 s	55-130(40-155)		,	
2.3 Fuel delivenes				3. Dimen	sions for assembly and adjustment
Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)	Designation	
End stop	1250 1200	max.1,0 ( 9,0-19,0		<b>K</b>	3,2-3,4
	1150	45,5-54,5 (45,0-55,0)		. <b>KF</b>	5,7-6,0
	1080 800	(78,0-84,3) 80,0-82,0 (78,0-84,0)	' :   .	MS	1,3-1,5
	500	78,5-81,5 (76,3-83,7)	•	svs	max.6,0
	;	· •			
	4400	0		A	
switch-off	1100			. 8	
	:		<u> </u>		
Idle stop	450	max. 1,0		Observations	
	350	0,5-6,5 (11,0-21,0	,	:	
	300	(11,0-21,0	<b>'</b>		
End stop	170	min. 100	•	;	
Fun 2 coh	250	max. 75		•	
2.4 Solenoid	max. cut-in voltage	xxxx min. 10 V	:	1	

rated voltage 12V

mm

10.83

**I8S-234** 

WPP 001/4 REN 2,0 h

2. Edition

company.

engine

supersedesREN

VE 4/9 F 2100 R 130

0 460 494 128

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel  1.2 Supply-pump pressure  1.3 Full-load delivery with charge-air pressure Full-load delivery without charge-air pressure 1.4 Idle regulation  1.5 Full-speed regulation  1.6 Start  1.7 Load-dependent port-closing	1400 1400 1400 600 375 2300 100	4,0-4,4 5,1-5,7 46,0-47,0 30,3-31,3 4,0-8,0 18,0-24,0 min. 50,0	mm bar (kgf/cm²) cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes cm³/1000 strokes	0	2,5(3,0) 2,5(3,0)

z. lest Spec	uncations	checking values in t	nackers ( )	1400	1800	2000
.1 Timing device DA=0,8 bar	n = rev/miñ mm	1,9-2,7(1,6	-3,0) (3,	5-4,9) 5,8-6	1800 1800	6,1-6,9(5,8-
2.2 Supply pump DA=0,8 bar	n = rev/min bar (kgf/cm²)	400 1,9-2,5			6,3-6,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138(40-	153)		2100 55-138(40-1	53)
2.3 Fuel delivenes	!				3. Dimen	sions tor assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery		Charge-air press. bar (kgt/cm²)	Designation	111111
End stop	2600 2400	max. 2.0 max. 14.0		0,8	к	3,2-3,4
	2300	50 0 41 0	(17,0-25,0) (37,2-41,8)	0,8 0,8	KF	5,7-6,0
	2000 1400	38,0-41,0	(44,2-48,8)	0,8	MS	1,4-1,6
	1000	41,5-44,5	(40,0-46,0)	0,8	svs	5,5
	700 * 600	35,3-36,3	(32,8-38,8 (27,8-33,8)	0,2 0		
	•	-		ه مستونیت در در ساود در	A XK	20,2-22,2
switch-off eléctr.	400	0			8 XL	7,7-11,0
	350	9,0-13,0	(7,0-15,0)		Observations	
idle stop	375		(2,0-10,0)			d-pressure
	480	max. 2,0				ator stroke
End stop	170 300	min. 40 max. 40		;		m ion at the ing nut. (46)
2.4 Solenoid	max. cut-in volt	age XXX Min	. 10 V		• ; 	
	1 MOR MODRO XX	xrated volta	30 1210	·	-	02.84

Geschaftsbergich KH. Kundendienst. Kfz-Ausrustung. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d Allemagne par Robert Bosch GmbH.

46

WPP 001/4 MAN 5,6 g

1. Edition

En

VE 6/12 F 1400 R 132 0 460 426 032 company D 0226 MK 141 kW engine

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

0,2

+ 0,02 mm

see VDT-W-460/

1. Settings	Rot. speed	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1. Oction-90	800	3,1-3,5		1,0	
1.1 Timing device travel	800	5,2-5,8	mm	1,0	
1.2 Supply-pump pressure	_	1	bar (kgf/cm²)	1,0	4,0(4,5)
	1000	119,0-120.0	cm <sup>3</sup> /1000 strokes	1,0	1,0(1,0)
1.3 Full-load dei:very with charge-air pressure	630	81,0-82,0	cm <sup>3</sup> /1000 strokes		
Full-load delivery without charge-air pressure	300	10,0-16,0	cm <sup>3</sup> /1000 strokes		3,5(4.5)
1 4 Idle regulation	1440	104,0-112,0		1,0	i
1.5 Full-speed regulation			cm <sup>3</sup> /1000 strokes		ř 1
) J Full-Space regulation	100	min. 75,0	cm <sup>3</sup> /1000 strokes	1	
1.6 Start	800			1,0	
1.7 Load-dependent port-closing	. 000	1			

checking values in brackets (		
500 1,5-2,3(1,2-2,6)	800 (2,6-4,0)	1100 4,2-5,0(3,9-5,3)
200 2,3-2,9		1400 7,3-7,9
		1400 55-138(40-153)
	500 1,5-2,3(1,2-2,6) 200	500 1,5-2,3(1,2-2,6) 800 (2,6-4,0)

2.3 Fuel delivenes				•	3. Dimen	for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes		erge-air press (kgf/cm²)	Designation	mm
End stop	1620 1550 1440 1400 1000 800 630 *630	115,5-118,5 121,0-125,0 118,0-122,0	(31,0-41,0) (103,0-113,0) (114,0-120,0) (116,5-122,5) (119,2-126,8) (116,2-123,8) (108,2-115,8) (77,7-85,3)	; 1,0 ) 1,0 ) 1,0 ) 1,0	K KF MS SVS	- 5,7-6,0 1,0-1,25 2,7
switch-off					: <b>A</b>	
• •	1	1			; <b>8</b>	٠٠.

2.4 Solenoid	max. cut-in volta	ge XXX min. 10 V Krated voltage 12V.	
End stop	320 430	min.90,0 max. 90,0	
Idle stop	400 350 300	max. 2,0 max. 5,0 (8,0-18,0)	:

Observations

\*Manifold-pressure compensator stroke = 7,5 mm Correction at the adjusting nut. (46)

BOSCH

VE 4/9 F 2250 R 134-1

0 460 494 134

WPP 001/4 VWW 1,6 V 5

2. Edition

supersedes 7.83 company VWW

engine 086 T

COO VIDT-W-460/

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -	mm			288 401-44-7001		
1. Settings	Rot. speed rev/min	Settings	in control of the con	Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1 1 Timing device travel	1500	3,3-3,7	mm	0,75		
1 2 Supply pump pressure	1500	4,6-5,2	bar (kgf/cm²)	0,75		
1 3 Full-load delivery without	600	22,5-23,5	cm <sup>3</sup> /1000 strokes	0		
charge-air pressure Full-load delivery with	1500	42,5-43,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)	
charge-air pressure  1 4 Idle speed regulation	450	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)	
1 5 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	0		
1 6 Full-load speed regulation	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75		
1.7 Load-dependent start of delivery	-					

2. Test Spec	ifications	checking values in brackets (	)	the state of the second st
2.1 Timing device	n = rev/min	1000	1500	2250
LDA=0,75 bar		1,3-2,1(1,0-2,4)	(2,8-4,2)	6,0-6,8(5,7-7,1)
2.2 Supply pump	n = rev/min	600		2250
LDA=0,75 bar	bar (kgf/cm²)	2,5-3,1		6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138(40-153)		2250 (0,75 bar) 55-138(40-153)

Overflow delivery	cm <sup>3</sup> /10 s	55-138(40-153)			55-138(40	)-153)
2.3 Fuel delivenes	<u>i                                      </u>				3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	; mm
End stop	2750 2525	max. 3,0	(8,0-16,0)	0,75 0,75	к	3,2-3,4
	2250 1500		(36,8-41,2) (40,8-45,2)	0,75 0,75	KF MS	5,7-6,0 1,2-1,4
	1000 <b>*</b> 600	32,5-33,5	(30,8-35,2) (20,0-26,0)	0,3 0	svs	5,7
switch-off mech. elektr.	2250 400	0			A B	· • • •
idle stop	450 1200	max. 9,0	(4,0-12,0)			d-pressure ator stroke
End stop	400 500	min. 21,0 max. 29,0			= 4,0 Correct	
2 & Solengid	max. cut-m vol	tage XXX min.	10,0 V		•	

INSTRUMENTAL rated voltage 12V.

WPP 001/4 VWW 1,6 V 6 2. Edition

VE 4/9 F 2250 R 134-2 0460 494 135

supersedes7.83 company VWW 086 T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-strake setting	mm			see VDT-W-460/		
1. Settings	Rot speed rev/min	Settings		Charge-air press bas (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
1 1 Timing device travel	1500	3,3 - 3,7	mm	0,75 bar		
1.2 Supply pump pressure	1500	4,6-5,2	bar (kgt/cm²)	0,75		
1.3 Full-load delivery without	600	22,5-23,5	cm <sup>3</sup> /1000 strokes	, 0		
charge-air pressure Full-load delivery with	1500	42,5-43,5	cm³/1000 strokes	0,75	2,5 (3,0)	
charge-air pressure  1 4 Idle speed regulation	475	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)	
1 5 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	. 0		
1 6 Full-load speed regulation	2525	9,0-15,0	cm <sup>3</sup> /1000 strakes	0,75		
1.7 Load-dependent start of delivery	-			·		

2. Test Spe	cifications	checking values in brackets (	)	
2 1 Timing device  LDA = 0,75b	n = rev/min	1000 2,3-2,1(1,0-2,4)	1500 (2,8-4,2)	6,0-6,8 (5,7-7,1)
22 Supply pump LDA = 0,75b	n = rev/min	600 2,5-3,1		2250 6,5-7,1
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2250 (0,75 bar) 55-138 (40-153)

2 3 Fuel delivenes			-		3. Dimen	Sions
Speed control lever	Rot speed	Fuel delivery cm3/1000 strokes		Charge-air press bar (kgt/cm²)	Designation	and adju
End stop	2750 2525 2250	max. 3,0 38,0-40,0		0,75 bar	K KF	3,2- 5,7-
*	1500 1000 600	32,5-33,5	(40,8-45,2) (30,8-35,2) (20,0-26,0)		ms svs	1,2-
		:			;	
switch-off elektr.	400	0			8	
idle stop	475 1200	max. 4,0	(4,0-12,0)		Observations	•• ,
End stop	400 500	min. 21,0 max. 29,0			*Manifold compensa = 4,0 m Correcti	ator str nm ion at t
2.4 Solenoid	max cut-in volta	nge xxxx min. xx rated volta	10,0 V ge 12V.		adjustir	ig nuc.

3,2-3,4 5,7-6,0 1,2-1,4 MS SVS 3.2 ervations Manifold-pressure compensator stroke = 4,0 mm Correction at the adjusting nut. (46)

for assembly and adjustment mm

12.83

BOSCH

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46

WPP 001/4 VWW 1,6 W 6

2. Edition

<u>En</u>

supersedes10.83 company VWW engine. 086 T

VE 4/9 F 2250 R 134-4 0 460 494 137

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting =	mm	mm			
1. Settings	Rot speed Settings rev/min			Charge-air press bar (kyf/cm²)	Difference in delivery cm <sup>3</sup>
1.1 Timing device travel	1500	3,2-3,7	mm	0,75	
1 2 Supply pump pressure	1500	4,6-5,2	bar (kgt/cm²)	0,75	
1 3 Full-load delivery without	600	22,5-23,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery with	1500	42,5-43,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
charge-air pressure  1 4 Idle speed regulation	475	6,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
1 5 Start	100	min. 35	cm=/1000 strokes	0	
1 6 Full-load speed regulation	2525	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1.7 Load-dependent start of delivery	-				

2. Test Spec	cifications	checking values in brackets (	)	
2 1 Timing device LDA=0,75 bar	n = rev/min	1000 1,3-2,1(1,0-2,4)	1500 (2,8-4,2)	2250 6,0-6,8(5,7-7,1)
22 Supply pump LDA=0,75 bar	n = rev/min - bar (kgt/cm²)	600 2,5-3,1		2250 6,5-7,1
Cverflow delivery	n = rev/min cm³/10 s	600 (0 bar) 55-138 (40-153)		2250 (0,75 bar) 55-138(40-153)

2 3 Fuel deliveries					3. Dimer	ensions.	
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	Designation	and adjustment mm	
End stop	2750 2525	max. 3,0	(8,0-16,0)	0,75 0,75	к	3,2-3,4	
	2250	38,0-40,0	(36,7-41,3)	0,75	KF	5,7-6,0	
	1500 1000 *	32,5-33,5	(40,7-45,3) (30,7-35,3)	0,75 0,30	MS	1,2-1,4	
	600	,-	(20,0-26,0)	0	s <b>vs</b>	3,2	

switch-off elect.	400	0		. в
!die stop	4/5 1200 1125 **	max. 4,0 22,0-24,0	(4,0-12,0)	Observations
End stop	400 500	min. 21 max. 29		Please note instructions on sheet 2
2.4 Solenoid	max. cut-in volta	ge		

- \* Manifold-pressure compensator stroke = 4,0
- \*\* Setting point for EGR

Pull control lever toward full load untill gauge fits over driver and housing cover web. Measure delivery.

2. Test Specifications checking values in brackets (

WPP 001/4 VWW 1,6 V 9 2. Edition

VE 4/9 F 2400 R 138 0 460 494 131

Overflow temperature 45° C

company VWW engine, 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

12.83

see VDT-W-460/

Testoil-ISO 4113

Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1500	2,9 - 3,3	mm		
1500	4,3 - 4,9	bar (kgf/cm²)		
1500	33,0-34,0	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
475	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0 (3,0)
100	min- 35,0	cm³/1000 strokes		
2600	11,0-17,0	cm <sup>3</sup> /1000 strokes		
	į			
	1500 1500 1500 - 475 100 2600	rev/min  1500	rev/min  1500  2,9 - 3,3  mm  1500  4,3 - 4,9  bar (kgf/cm²)  1500  33,0-34,0  cm³/1000 strokes  cm³/1000 strokes  100  min - 35,0  cm³/1000 strokes  11,0-17,0  cm³/1000 strokes	1500 2,9 - 3,3 mm  1500 4,3 - 4,9 bar (kgf/cm²)  1500 33,0-34,0 cm³/1000 strokes  cm³/1000 strokes  475 6,0-10,0 cm³/1000 strokes  100 min- 35,0 cm³/1000 strokes  2600 11,0-17,0 cm³/1000 strokes

2 1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1500 (2,4-2,8)	2400 6,1-6,9(5,	,8-7,2)
2 2 Supply pump	n = rev/min bar (kgf/cm²)	600 2,2-2,8		2400 6,4-7,0	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)	2400 55-138 (40-153)		53)
2 3 Fuel deliveries Speed control lever	Rot speed	Fuel delivery   cm³/1000 strokes	Charge-air press	3. Dimen	sions for assembly and adjustment mm
End stop a	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0 27,5-29,5(26,3-30,7 (31,3-35,7 21,5-24,5(20,0-26,0	') ')	k kf ms svs * FH	3,2-3,4 5,7-6,0 1,3-1,5 2,7 1,8-2,4

End stop 🥏	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5(26,3-30,7) (31,3-35,7) 21,5-24,5(20,0-26,0)	k KF MS SVS * FH	3,2-3,4 5,7-6,0 1,3-1,5 2,7 1,8-2,4
switch-off electr.	400	0	A B	
Idle stop	475 650 1200	(4,0-12,0) max. 6,0 max. 5,0	*operating	g stroke ort accel.)
End stop	400 500	min.18,0 max.23,5		
2.4 Solenoid	cut-in voltag	e min 10,0 V	 į	

Geschaftsbereich KH. Kundendienst. Ktz-Ausrustung. 1990 by Robert Bosch GmbH. Postfach 50. D-7000 Stuftgart 1. Printed in the Federal Republic of Germany Imnume en Republique Federale d Allemagne par Robert Bosch UnibH.

6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 W 2

2. Edition

supersedes 7/83 company VWW engin**e** 086

see VDT-W-460/

VE 4/9 F 2400 R 138-1 0 460 494 140

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting	mm				
1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
1 1 Timing device travel	1500	2,9-3,3	emm		
1 2 Supply pump pressure	1500	4,3 - 4,9	bar (kgf/cm²)		
1 3 Full-load delivery without	1500	33,0-34,0	cm <sup>3</sup> /1000 strokes		2,5 (3,0)
charge-air pressure Full-load delivery with Charge-air pressure	:	-	cm <sup>3</sup> /1000 strokes		
1 4 Idle speed regulation	450	6,0-10,0	cm <sup>3</sup> /1000 strokes		2,0 (3,0)
1 5 Start	100	min. 35,0	cm <sup>2</sup> /1000 strokes		4
1 6 Full-load spend regulation	2600	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1.7 Load-dependent start of delivery					•

2. Test Spe	ecifications	checking values in brackets ( )		
2.1 Timing device	n = rev/min	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgt/cm²)	600 2,2-2,8		2400 6,4-7,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		2400 55-138 (40-153)
		The state of the s		3 Dimensions

2 3 Fuel delivenes					tor assembly and adjustment
Speed control lever Rot spee	Rot speed rev/min		Charge-air press bar (kgf/cm²)	Designation	mm
End stop	2800	max. 3,0 (10,0-18,0)		к	3,2-3,4
	2600 2400	27,5-29,5 (26,3-30,7)		KF	5,7-6,0
	1500	(31,3-35,7) 21,5-24,5 (20,0-26,0)		MS	1,3-1,5
	600	21,5-24,5 (20,0-20,0)		svs	2,7
				*FH	1,8-2,4
		the state of the s		A	

switch-off mech. elektr.	2400 400	0		8
die stop	450 650 1200 400 500	max. 5,0 max. 7,0 min. 18,0 max. 23,5	(4,0-12,0)	Observations *operating stroke (KSB)
2.4 Soleno:d	max cut-in vol	tage XXXX min. rated volta	10 V ge 12V.	

12.83

--- VDT-W-460/

# Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 3,9 y 1. Edition

VE 4/11 F 1150 R 140 C 460 414 009

Nozzle-and-holder assembly company IHC 1 688 901 020 (172 + 3 bar) engine DT 239/856

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

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	7	
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l	- CO	7

Pre-stroke setting 0,2	mm			See VD1-14-4007	
1. Settings	Rot speed revimin	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
a 4 Timber device travel	800	4,5-4,9	mm	0,8 bar	:
1 1 Timing device travel	800	5,3-5,9	bar (kgt/om²)	0,8 bar	
1.2 Supply-pump pressure  1.3 Full-load delivery with	500	76,5 <b>-77</b> ,5	cm <sup>3</sup> /1000 strokes	0	
charge-air pressure Full-load delivery without	800	95,5-96,5	cm <sup>3</sup> /1000 strokes	0,8 bar	3,5 (4,0)
charge-air pressure	350	28,0-32,0	cm <sup>3</sup> /1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1250	27,0-33,0	cm <sup>3</sup> /1000 strokes	0	J
1.6 Start	100	min. 100	cm <sup>3</sup> /1000 strokes	0,8 bar	
1.7 Load-dependent port-closing	•	_			

2. Test Spec	ifications	checking values in brackets (	1		
	n = rev/min	400 0,8-1,6 (0,5-1,9)	800 (4,0-5,4)	1150 5,3-6,1 (5,0-6,4	
and a septing the last	n = rev/min bar (kgf/cm²)	400 3,7-4,3		1150 6,4-7,0	
Overflow delivery	n = rev/min	500 55-138 (40-153)	!	1150 (0,8 bar) 55-138 (40-153)	
2.3 Fuel delivenes			Charge or press	3. Dimensions for assembly and adjustment	

2.3 Fuel deliveries					3
Speed control lever	Rot speed	Fuel delivery cm <sup>3</sup> /1000 strokes		Charge-air press bar (kgf/cm²)	·De
End stop			(25,5-34,5) (86,9-92,1) (93,4-98,6) (85,6-92,4) (73,6-80,4)	0,8 bar	
switch-of:	i   				
idie stop	350 400 450		(25,5-34,5) (8,5-17,5)		0
End stop	220 300	min. 100 max. 80			
2 4 Solenoid	mex. cut-in volteg	xxxx min.			

BXL Observations

AXK

Manifold-pressure compensator stroke = 4.9 mmCorrection at the adjusting nut. (46)

12.83

5,2-5,4 1,2-1,4

20,2-22,2

12,3-15,7

5,0

BOSCI

Geschäftsbereich KM. Kundendienst. Kfz-Ausrustung.

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estoil-150 4113

WPP 001/4 FIA 1,9 e

1. Edition

0 460 494 132

DHK: 1 688 901 022/130 bar

Test pressure line 6x2x450 mm / 1 680 750 073

company X 8/43

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

	em		see VDT-W-460/
-stroke setting		mm	

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
	1500	4,3-4,7	mm	1	
1.1 Timing device travel	1500	5,6.6,2		i	•
1 2 Supply-pump pressure	4500	31,0-32,0	bar (kgf/cm²)		2,5(3,0)
	1500	31,0-32,0	cm <sup>3</sup> /1000 strokes	1	_, ( , , ,
1.3 Full-load delivery with charge-air pressure	-	· •	cm <sup>3</sup> /1000 strokes	8	
Full-load delivery without charge-air pressure	350	9,0-13,0	cm <sup>3</sup> /1000 strokes	!	2,5(3,0)
1.4 Idle regulation	330	3,0 .0,0	Citias 1000 attores		
	2500	11,0-17,0	cm <sup>3</sup> /1000 strokes		
1 5 Full-speed regulation	400	min 55 0			
1 6 Start	100	min. 55,0	cm <sup>3</sup> /1000 strokes	1	
1.7 Load-dependent port-closing	· -				

	cifications	checking values in brackets (	1500	2300
2.1 Timing device	mm	1,7-2,5(1,4-2,8)	(3,8-5,2)	7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,8-3,4		2300 7,4-8,0
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	400 55-138(40-153)		2300 55-138(40-153)

			J. DHIRO	tor assembly
Rot. speed rev/min	Fuel delivery	Charge-air press. bar (kgf/cm²)	Designation	and adjustment mm
2600	6,2-6,8 ( 6,1-6,9) (10,0-18,0)		к	3,1-3,4
2400	21,0-27,0(20,0-28,0)		KF	5,7-5,9
2250	32,7-34,7(31,4-36,0) (29,2-33,8)		MS	1,7-1,9
1000	30,7-33,3(29,0-35,0) 32,0-35,0(30,5-36,5)		svs	2,8
		<u> </u>	XK	20,2-22,
			χ̂L	10,3-13,
	2600 2500 2400 2250 1500 1000	2600 6,2-6,8 (6,1-6,9) 2500 (10,0-18,0) 2400 21,0-27,0(20,0-28,0) 2250 32,7-34,7(31,4-36,0) 1500 (29,2-33,8) 1000 30,7-33,3(29,0-35,0)	2600 6,2-6,8 (6,1-6,9) 2500 (10,0-18,0) 2400 21,0-27,0(20,0-28,0) 2250 32,7-34,7(31,4-36,0) 1500 (29,2-33,8) 1000 30,7-33,3(29,0-35,0)	Plot speed rev/min cm <sup>3</sup> /1000 strokes bar (kgt/cm <sup>2</sup> )  2600 6,2-6,8 (6,1-6,9) 2500 (10,0-18,0) K  2400 21,0-27,0(20,0-28,0) 2250 32,7-34,7(31,4-36,0) 1500 (29,2-33,8) MS 1000 30,7-33,3(29,0-35,0) 600 32,0-35,0(30,5-36,5)  XK A XL

Idle stop	350 400	(7,0-15,0) max. 4,0	Observations
End stop	540 300 400	0 min. 45,0 max. 46,0	

xxx min. 10 V max. cut-in voltage 2.4 Solenoid reacyonacy rated voltage 12V.

BOSCH

46

WPP 001/4 REN 2,0 k

1. Edition

VE 4/9 F 2200 R 153 0 460 494 141

Pre-stroke setting

supersedes company enault engine J8S=709

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

see VDT-W-460/.

1. Settings	Rot. speed	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>
,	1400	3,9- 4,3	ram	0,8	
1 1 Timing device travel	1400	5,1-5,7	bar (kgf/cm²)	0,8	1
1.2 Supply-pump pressure	1400	50,0-51,0	cm <sup>3</sup> /1000 strokes	0,8	2,5 (3,0)
1 3 Full-load delivery with charge-air pressure	600	35,0-36,0	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	350	9,0-13,0	cm³/1000 strokes	0	2,5 (3,0)
1 4 Idle regulation	2400	23,0-29,0	cm <sup>3</sup> /1000 strokes	0,8	
1 5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes	0	
1 6 Start					
1.7 Load-dependent port-closing	; -				

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device	n = rev/min	1000 1,8-2,6(1,5-2,9)	1400 (3,4-4,8)	1800 5,6-6,4(5,3-6,7)	2000 6,2-7,0(5,9-7,3
2.2 Supply pump	n = rev/min ber (kgf/cm²)	400 1,9-2,5		1800 6,3-6,9	
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	300 55-138(40-153)		2200 55-138(40-153)	
2.3 Fuel delivenes				3. Dim	ensions  tor assembly and adjustment

Speed control lever	Rot. speed	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgf/cm²)
End stop	2700 2500 2400 2000 1400 1000 *700 600	max. 2,0 max. 17,5 (22,0-30,0) 42,5-44,5 (41,2-45,8) (48,2-52,8) 45,0-48,0 (43,5-49,5) 40,0-41,0 (37,5-43,5) (32,5-38,5)	) 0,8 ) 0,8 ) 0,8 ) 0,2
switch-off	2200	. 0	:
icia stop	480 375 350	max. 2,0 4,0-8,0 (2,0-10,0) (7,0-15,0)	
End stop	180 300	min. 40,0 max. 40,0	·
2.4 Solenoid	max. cut-in vol	lage	

Observations

Designation

KF

MS

SVS

\*Manifold-pressure compensator stroke = 4,5 mm Correction at the adjusting nut. (46)

BOSCH

3,2**-**3,4 5,7**-**6,0

1.4-1.6

3,6

46

WPP 001/4 REN 2,0 k 1

1. Edition

En

VE 4/9 F 2200 R 153-1 0460 494 156

1.7 Load-dependent port-closing

Pre-stroke setting

supersedes Renault company: J8S-T 01

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

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Test Instructions and Test Equipment

see VDT-W-460/...

1. Settings	Rot speed	Settings	Charge-air pres bar (kgf/cm²)	s. Difference in delivery cm <sup>3</sup>
, ootange	1400	3,9 - 4,3	o,8	
1.1 Timing device travel	1400	5,1 - 5,7	ar (kgt/cm²) 0,8	
1.2 Supply-pump pressure	1400	50 0 54 0	m <sup>3/1000 st/okes</sup> 0,8	2,5 (3,0)
1.3 Full-load delivery with charge-air pressure	600	35,0 - 36,0 0	m³/1000 strokes 0	
Full-load delivery without charge-air pressure	350	9,0 - 13,0	m³/1000 strokes 0	2,5 (3,0)
1 4 Idle regulation	2400	23,0 - 29,0	m <sup>3</sup> /1000 strokes 0,8	
1.5 Full-speed regulation	, =	1	ŧ.	l .

min. 60,0

cm<sup>3</sup>/1000 strokes

2. Test Spe	citications	checking values in brackets (			
2.1 Timing device	n = rev/min	1000 14 1,8-2,6 (1,5-2,9) (3,4	100 1-4,8) 5,6-6,4	1800 4 (5,3-6,7)	2000 6,2-7,0(5,9-7,
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 1,9 - 2,5		1800 6,3 - 6,	9
Overtiow delivery	n = rev/min cm <sup>3</sup> /10 s	500 55-138 (40-153)	5	2200 5-138 (40 <b>-</b> 1	53)
2.3 Fuel delivenes			1	3. Dimer	ISIONS for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm³/1000 strokes	Charge-air press bar (kgt/cm²)	Designation	mm
End stop	2700 2500	max. 2,0 max. 17,5	8,0 8,0	к	<b>3,</b> 2 <b>-</b> 3,4
	2400	(22,0-30,0)	8,0	KF	5,7-6,0
	2000 1400	42,5-44,5 (41,2-45,8) (48,2-52,8)	8,0 8,0	MS	1,4-1,6
	1000 *700	45,0-48,0 (43,5-49,5) 40,0-41,0 (37,5-43,5)	0,8 0,2	SVS	3 <b>,</b> 6
		(20 5 20 5)			

, 1	600	(32,5-38,5)	Ü	
switch-off	2200	0	i	1
Idle stop	480 375 350	max. 2.0 4,0-8,0 (2,0-10,0) (7,0-15,0)		
End stop	180 300	min. 40,0 max. 40,0		
2.4 Solenoid	max. cut-in vol	tage xx min. 10 V xirated voltage 12V.		

\* Manifold-pressure compensator stroke

compensator stroke = 4,5 mm Correction at the adjusting nut. (46)

BOSCH

WPP 001/4 FIA 1,9 d

1. Edition

VE 4/9 F 2300 L 157

Test pressure line

6x2x450 mm / 1 680 750 073

supersedes company. engine:

Fiat X8/48

0 460 494 144 DHK: 1 688 901 022/130 bar

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

see VDT-W-460/...

Pre-stroke setting	mm	mm			366 101 11 150	
1. Settings	Rot. speed	Settings	•	Charge-air press. bar (kgf/cm²)	Difference in delivery cm <sup>3</sup>	
,	1500	4,3-4,7	mm			
1.1 Timing device travel	1500	5,6-6,2	bar (kgf/cm²)	:	} }	
1.2 Supply-pump pressure	1500	31,0-32,0	cm <sup>3</sup> /1000 strokes	:	2,5 (3,0)	
1 3 Full-load delivery with charge-air pressure	-	-	cm <sup>3</sup> /1000 strokes		1	
Full-load delivery without charge-air pressure	350	9,0-13,0	cm <sup>3</sup> /1000 strokes	•	2,5 (3,0)	
1.4 Idle regulation	2500	11,0-17,0	cm <sup>3</sup> /1000 strokes	* 1	:	
1.5 Full-speed regulation	100	min. 55,0	cm <sup>3</sup> /1000 strokes	4	i	
1 6 Start	100	: III 33,0		:		
1.7 Load-dependent port-closing	-	-			<u>.</u>	

2. Test Spe	cifications	checking values in brackets (	)		
2.1 Timing device		800	1500 (3,8-5,2)	2000 5,8-6,4(5,4-6,8)	2300 ) 6,7-7,5(6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm²)	400 2,9-3,5		2300 7,4-	)
Overflow delivery n = rev/min cm <sup>3</sup> /10 s		400 55-138(40-153)	2300 -153) 55-138(40-153		•
				0 D:-	- oncione

2.3 Fuel delivenes				3. Daller	for assembly and adjustment
Speed control lever	Rot. speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press. bar (kgf/cm²)	Designation	mm
End stop	2600 2500	0,5-6,5 (10,0-18,0)		К	3,1-3,4
	2400	21,0-27,0(20,0-28,0)		KF	5,7-6,0
	2250 1500	33,4-35,4(32,1-36,7) (29,2-33,8)		MS	1,4-1,65
	1000 600	30,7-33,3(29,0-35,0) 31,5-34,5(30,0-36,0)		svs	2,8

switch-off

	350	7,0-15	,0)	Observations
Idle stop	400	0,5-6,5		
1	450	max. 1,5 min. 45,0		
End stop	300 400	max. 46,0		
		·		
2.4 Solenoid	max cut-in volta	AAA		
i	test voltage	rated voltage 12V		

46 WPP 001/4 REN 2,0f

1. Edition

VE 4/9 F 2250 R 158

1.7 Load-dependent port-closing

0 460 494 145

Overflow temperature 45° C

company Renault

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Fre-stroke setting	mm			see VDT-W-460/ .	
1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgt/cm²)	Difference in delivery cm <sup>3</sup>
,	1400	4,4-4,8	mm	1	:
1.1 Timing device travel	1400	4,9-5,5	bar (kgf/cm²)		
1 2 Supply-pump pressure	1400	39,0-40,0	cm <sup>3</sup> /1000 strokes	:	2,5 (3,0)
1.3 Full-load delivery with charge-air prossure			cm³/1000 strokes	•	
Full-load delivery without charge-air pressure	400	7,5-11,5	cm <sup>3</sup> /1000 strokes	•	2,5(3,0)
1.4 tole regulation	2400	17,0-23,0	cm <sup>3</sup> /1000 strokes	ŧ	:
1 5 Full-speed regulation  1 6 Start	100	min. 52,0	cm <sup>3</sup> /1000 strokes	• • •	
	•			•	•

2. Test Spe	ecifications	checking values in brackets (	)	2000	
2.1 Timing device	n = rev/min	1000 2,6-3,4(2,3-3,7)	1400 (3,9-5,3)	2000 6,7-7,5 (6,4-7,8)	
2 2 Supply pump	n = rev/min bar (kgf/cm²)	1000 3,9-4,5		2000 6,5-7,1	
Overflow delivery	r <sub>i</sub> = rev/min	500 55-138 (40-153)		55-138 (40-153)	

2 3 Fuel delivenes				3. Dimensions		
Speed control lever	Rot speed rev/min	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air pressibar (kgt/cm²)	Designation	and adjustment mm	
End stop	2250	max. 2,0 (16,0-24,0)		к	3,2-3,4	
	2400 2200	31 5-33 5(30.2-34.8)		KF	5,7-5,9	
	2100	32.5-34.5(31.2-35.8)		MS	1,4-1,6	
	1400 1000	(37,2-41,8) 35,5-38,5(34,0-40,0)		svs	max.3,6	

switch-off	2250	0	· · · · · · · · · · · · · · · · · · ·	XK <sup>®</sup> XL
idle stop	650 400	max.	5,0 (5,5-13,5)	Observations
End stop	320 430	min. max.	45,0 45,0	
2.4 Solenoid	max. cut-in voltage	XX	min. 10 V	

BOSCH

WPP 001/4 VWW 1.6 e

1. Edition

En

VE 4/9 F 2000 R 160

0 460 494 149

supersedes company VWW engine 068.5 T

#### Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

3 Dimensions

Pre-stroke setting	mm			see VD1-W-460/	
1. Settings	. Rot speed revimin	Settings		Charge-air press bar (kg1/cm²)	Difference in delivery cm <sup>3</sup>
	1500	3,2-3,6	mm	0,75	
1.1 Timing device travel	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1 2 Supply-pump pressure	600	24,5-25,5	cm <sup>3</sup> /1000 strokes	0	
1.3 Full-load delivery with charge-air pressure	1500	41,5-42,5	cm <sup>3</sup> /1000 strokes	0,75	2,5 (3,0)
Full-load delivery without charge-air pressure	475	ô,0-10,0	cm <sup>3</sup> /1000 strokes	0	2,0 (3,0)
15 Full-speed regulation	2110	9,0-15,0	cm <sup>3</sup> /1000 strokes	0,75	
1 6 Start	100	min. 35,0	cm <sup>3</sup> /1000 strokes	0	
1 7 Load-dependent port-closing	-	•			

2. Test Spec	ifications	checking values in brackets (	1	
21 Timing device LDA=0,75bar	n = rev/min mm	1000 1,2-2,0 (0,9-2,3)	1500 (2,7-4,1)	1980 5,2-6,0 (4,9-6,3)
2.2 Supply pump n = rev/min LDA=0,75 bar bar (kgf/cm²)		600 3,4-4,0		1980 6,6-7,2
Overflow delivery	n = rev/min cm <sup>3</sup> /10 s	600 55-138 (40-153)		1980 (0,75 bar) 55-138 (40-153)

			O. Dillio	tor assembly and adjustment
Rot speed	Fuel delivery cm <sup>3</sup> /1000 strokes	Charge-air press bar (kgf/cm²)	Designation	: mm
2150	max. 4.0	0,75		
	(8,0-16,0)	0,75	К	3 <b>,</b> 2 <b>-</b> 3,4
1980	39,0-41,0 (37,7-42,3)	0,75	KF	5 <b>,</b> 65 <b>-</b> 5,95
	\ - , · .		MS	1,2-1,4
600	24,5-25,5 (22,0-28,0)	0	svs	5.7
	2150 2110 1980 1500 1000	2150 max. 4,0 2110 (8,0-16,0) 1980 39,0-41,0 (37,7-42,3) 1500 (39,7-44,3) 1000 33,5-34,5 (31,0-37,0)	2150 max. 4,0 0,75 2110 (8,0-16,0) 0,75 1980 39,0-41,0 (37,7-42,3) 0,75 1500 (39,7-44,3) 0,75 1000 33,5-34,5 (31,0-37,0) 0,3	Rot speed rev/min         Fuel delivitry cm³/1000 strokes         Charge-air press bar (kgf/cm²)         Designation           2150         max. 4,0         0,75           2110         (8,0-16,0)         0,75           1980         39,0-41,0 (37,7-42,3)         0,75           1500         (39,7-44,3)         0,75           1000         33,5-34,5 (31,0-37,0)         0,3           MS

		And the Control of th	A
switch-off elektr.	400	0	В
Idle stop	475	(4,0-12,0)	Observations
End stop	600 350 450	max. 3,0 min. 32,0 max. 38,0	After each LDA pressure change operate control lever.
		:	
2 4 Solenoid	max cutin vo	mage XXXX min., 10 V	1

BOSCH

Fuel Injection Pumps and Governors

WPP 001/4 HAN 10,8 e

5. Edition

En

supersed

PE 6 A 95 D 320 RS2364 RS2364 RS2557 EP/RSV 350-1100 A8 B1104DR (1) 350-1100 A8 B1103DR (2) 350-1100 A8 B1116DR (3) A8C 1116 R (3)

compan'M(\*-Hanomag engine D \$62 (1) D 963 (2) D 963 (3)

(1)

1104DR

\*\* Cold-start test according to VDT-I-420/114
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fue! Injection Pump Settings

Rotational speed	Control rod travel	10-2,30) Fuel delivery (2 - 3) cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery (1) cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve)
1100	10,8	10,5 - 10,7	0,3(0,6		9,0-9,3	
350 700/500	+0,1	0,9 - 1,4 C, 4-5	0,3(0,5	+0,1	1,4-2,0	

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	rated speed	Control rod travel	Intermediate Degree of deflection of control lever	rated spe rev/min	Control rod travel	4 Lowe Degree of deflection of control lever 7	rated spe rev/min 8	Contro! rod travel mm	3 Tor	que control Control rod travei mm
1oose	800 x =	0,3-1,0				ca.25	350 100	5,5 min. 19	1100 10,7- 500	10,8
ca.56	9,0 4,0 1370	1140-115 1170-120 0,3 - 1,					350	5,9-6,1 550 =2,0 0 - 1	300	11,5

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-lo	oad stop			Starting fuel delivery idle		Sa Idle	estop	
Test oil temp. 40°C (104°F) rev/min		Note: changed to rev/min 3	rev/min cm³/1000 strokes 4 5		rev/min cm <sup>21</sup> 1000 strokes 6 7		rev/min 8	Control rod travel mm
(1) 1100	89,0 - 91,0 (87,0 - 93,0)	1140-1150*	700	93,0 - 96,0 (91,0 - 98,0)		20,0-20,5 mm RW **		
			500	83,5 - 86,5 (81,5 - 88,5)				./.

Checking values in brackets

\* 1 mm less control rod travel than col 2

#### **B.** Governor Settings

1103DR u. 1116DR (2-3)

Degree of deflection of control tever	r rated speed Control rod travel mm	revimin Control rod travei mm revimin	Interne	diate rated	speed 6	Control- lever deflection in degrees 7		rated speed Control rod travel mm	17.31	rque control Control rod travel mm
loose	800 x =	0,3-1,0 5,5				ca.25		5,5 min. 19	1100 10,8- 975	10,9
ca.56	4,0	1140-1150 1180-1210 0,3 - 1,7					350 490-55 650	5,9-6,1 0 =2,0 0 - 1	11,0- 500 11,5-	11,2 11,6

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Fu	il-load stop	6 Rotational- speed limitat.			Starting fuel delivery 5		4a idle stop	
Test on te revimin	cm <sup>9</sup> /1000 strokes	Note: changed to ) rev/min 3	rev/min	• cm <sup>3</sup> /1000 strokes 5	revimin	cm+/1000 strakes	rev/min 8	Control rod travel mm
(2-3) 1100	103,5 - 105,5 (101,5 - 107,5)	1140-1150*	700 500	109,5 - 112,5 (107,5 - 114,5) 105,0 - 107,0 (103,0 - 109,0)				

Checking values in brackets

# Testoil-ISO 4113

\* 1 mm less control rod travel than col. 2

#### **B. Governor Settings**

Degree of deflection of control lever	deflection of control mm mm rev/min		Interm	Intermediate rated speed		Control- lever deflection in degrees 7	rev/min	r rated speed   Control rod travel   mm   9	3 for rev/min	Control rod travel	
29											

## C. Settings for Fuel Injection Pump with Fitted Governor

1000 011 10111191 10 0 (10 11)		Note:	speed limitat. Characteristics			Starting fuel delivery 5 da Idle sto		
rev/mmn	cm <sup>3</sup> /1000 strokes	changed to ) rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	mm 9
			1					

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 HAN 10,8 h

Edition

PE 6 A 95 D 320 RS2557

EP/RSV 350-1100 A8B1117DR

A8C 1117 R

supersedes 10.81

company

MF-Hanomag

angine

D 962

Komb.-Nr. 0 400 676 157

\*\* Cold-start test according to VDT-I-420/114

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port crosing at prestroke

Testoil-ISO 4113

(2 10-2 30)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delive:v	Spring pre-tensioning (torque-control valve) mm
1100	10,0+0,	9,1-9,3	0,3(0,6)	2	3	:
400	7,9-8,	3,6 - 4,2	0,3(0,5)			
				ľ		

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper Degree of deflection of control lever	rated speed	Control rod travel mm	Intermediate Degree of deflection or control lever	rated spe	Control rod travel mm	4 Lower Degree of deflection of control lever 7	rated spe revimin 8	Control rod travel mm	(3) Tor rev/min 10	que control Control rod travel mm
100se ca.52	1205-1	0,3-1,0 4,50 150 = 9,0 235 = 4,0 0,3-1,7	-	40	-	ca.23	100 400 580- 700	7,5 min. 19 7,9-8,1 540 =2,0 max.1,0	1100 960 500	10,0+0,1 10,2+0,2 10,6+0,1

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to	ad stop	6 Rotational- speed limitat		el delivery fracteristics	Starting Idle	fuel delivery	5a Idle stop	
Test oil temp 40°C (104°F)  rev/min cm³/1000 strokes 1 2		Note- changed to rev/min rev/min 3 4		cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3/1000</sup> strakes 7	rev/min	Control rod travel mm
1100	89,0 - 91,0 (87,0 - 93,0)	1140-1150*	700	<sup>2</sup> 3,0 - 96,0 (91,0 - 98,0)	100	19-21mmRM **	-	-
			500	83,5 - 86,5 (81,5 - 88,5)			:	
					<u> </u>		<u> </u>	<u>1</u>

Checking values in brackets

\* 1 mm less control for travel than col. 2

12.83

40

WPP 001/4 DEE 7,6 f 1. Edition

En

PES 6 A 100 D 410 RS 3038

RSV 400-1100 A 2 B 2120 L

supersege se

John Deere

Komb.-Nr. 9 400 230 032

engine 6 466 AT-05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,95-2,05

Porticiosing at prestroke

(1,90-2,10)

mm (from BDC)

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning itorque con los valves
rev.min	mm 2	cm·/100 strokes	cmill 100 strokes	mm 2	cm~100 strokes	D.
1100	10,8+0,1	10,8-11,0	0.3			
400	6,6-6,8	1,3-1,7	0,3			

Adjust the fuel delivery from each outlet according to the values in E

#### **B. Governor Settings**

	r rated speed Control rod travei mm		Interme	diate rated	speed 6	Control tever deflection in degrees 7		rated speed Control rod travel mm	(3)	rque control Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca. 17		6,1 min. 19,0	1100 650	10,8-10,9 11,8-12,1
ca. 40	9,8 4,0 1300	1145-1155 1205-1235 0,3-1,7					400 480-54 850	6,6 0 = 2,0 max. 1,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(20)	il-load stop	6 Rotational speed limitat 3a Fuel delivery characteristics			Starting fuel delivery 5 4a light stop			
rev/min	emp 40°C (104°F) cm <sup>3/</sup> 1000 strakes 2	Note changed to revimin	revimin	cm:/1000 strokes	rev/min	cm <sup>1</sup> /1000 strokes 7	rev:min 8	travel mm 9
1100	108,0-110,0 (105,0-113,0)	1145-1155*	650	115,5-118,5 (112,5-121,5)	100 High 1200 Low 400	170,0-195, = 21,0 mm idle speed 27,0-37,0 dle speed 13,0-17,0	RW 1	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

BOSCH

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 

1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuftgart 1. Printed in the Federat Republic of Germany Imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4

4. Edition

En

PES 6 A 85 D 410/3 RS 2366 EP/RSV 325-1400 A8B674D, 707 D 325-1150 A8B674D, 707 D

supersodes company

eligibe

6.82 KHD BF 6 L 913

RS 2415

\*\*\* Instruction:

Test details see page 3!

All test specifications are valid for Bosch Fairl Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Porticiosing at prestruke 1,9 + 0,1

Festoil-ISO 4113

mm (from 890)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Strang pre-tensioning (torque contril valve)
tev/min	mn: (2)	cm¥100 strckes 3	100 strokes	a.m 2	cm <sup>3</sup> 100 strokes	mm o
1000	9	4,1 - 4,5	0,4			
	6	0,6 - 1,4				
200	9	1,4 - 2,2				

#### **B.** Governor Settings

	r rated speed Control rod travel min	Trey,min Control ic d travel mm rey/min 3	Interm	ediate rat	ed speed	Control lever deflection in degrees 7		rated speed Control rod frace) mm	(3) for	que contra Control rod travel ma 11
ca.69	1400 1450 1500	16,0 10,5 4.0		without auxiliar			325 200 325	5,5 19 - 21 5,2-5,8	1400	0
ca.68	1400 1510 1600	ca.10,0 ca. 4,0 0,3-1,5	'	h auxi	iliary		500 650	1,2-3,3	500	1,2-1,4

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ill load stop	Speed iimidat			Starting f	uet delivery 5	4a lidle stop	
rev min	cm <sup>3</sup> /1000 strokes	Note changed to revimin 3	revimin 4	cm <sup>3</sup> 1000 strokes 5	revimin 6	çm≸.1000 strokes 7		Control rod travel mm
LDA ***	0,7 bar	***	LDA *** LDA 500	0,7 bar 0 bar 43,5 - 47,5	100	119,5- 129,5	325	5,5**
(inrea	se by 1,0 cm <sup>2</sup>	<u> </u>   <u> </u>						./.

Checking values in brackets

\* 1 mm tessic introl multifavel than col 2

Kundendienst Kf2 Ausrustung. n Gebei Postano 50-0-7000 Stuttgard filthalter in the Federal Filipopt, link geminic. Federale d Allemagne par Robert Bosch Gmbri.

#### **B.** Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

	r rated speed		Intermediate rated speed		Lower rated speed			3 Torque control		
Degree of deflection of control	travel mm	travel mm rev/min				Control- lever deflection	rev/min	travel	rev/min	travel
lever 1	2	3	4	5	6	in degrees 7	8	9	10	11
ca.56		16,0		_		ca. 21 y spring	325	5,5	1130	0
	1200 1250	11,1 5,4	Witho	without auxiliar			200	19 - 21	500	
29	1220 1300 1380	7,5-10,4 1,3-3,6 0,3-1,5	with	auxil.	iary s	pring	325 500 660	5,5-5,8 1,4-3,4 0 -1,5	500	1,0-1,2

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ilt-load stop	6 Rotational- speed limitat		el delivery aracterístics	Starting (	uel delivery 5	4a idle stop	
	cm <sup>3</sup> /1000 strokes 2 0,7 bar	Note changed to ) rev/min 3	rev/min 4LDA	cm <sup>1</sup> /1000 strokes 5 0,7 bar	rev/min	cm1/1000 strokes	rev/min	Control rod travel mm 9
***		***	***		100	119,0-129,	5;325	5,5**
***	See page 3		LDA 500	0 bar 43,5 - 47,5				

Checking values in brackets

\* 1 mm less control rod travel than col. 2

#### D. Adjustment Test for Manifold Pressure Compensator

Testatn =

Testoil-ISO 4113

500

rev/m:n decreasing pressure - in bar gauge pressure

	^^^^			
Pump/governor	Setting Gauge pressure	bar	Measurement  Gauge pressure = bar	diminution Control rod travel-  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
all governors	0,38		0,10	0,2 - 0,3

Notes

(1) when n =

rev/min and gauge pressure

bar ( maximum full load control rod travel)

En

## C. Settings for Fuel Injection Pump with Fitted Governor

engine por Full-load de Control-rod Test dil terr	Blivery	Rotational-speed limitation	Fuel deliv	ery characteristics	Starting lidle switching	fuel delivery	intermedi rotational Torque-c travel	speed
rev/min	cm <sup>1</sup> /1000 strokes	rev/min	ten/wiu	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strakes	revimin .	mm
1	2	3	4	5	6	7	8	

BF 6 L 913 - PES 6 A D..RS2366, 2415 F or B output at ... min<sup>-1</sup>

	1400 1400 1325 1325 1325 1250	88,0 - 90,0 84,0 - 86,0 90,5 - 92,5 87,5 - 89,5 82,5 - 84,5 87,0 - 89,0	1420 1420 1340 1340 1340 1270	800 800 850 800 800 800	80,0 - 83,0 66,0 - 69,0 88,5 - 90,5 82,5 - 85,5 67,5 - 70,5 84,5 - 87,5	160 PS / 142 PS / 168 PS / 160 PS / 140 PS / 160 PS /	n = 2800 n = 2800 n = 2650 n = 2650 n = 2650 n = 2500
•	1250 1250 1200 1200 1165	83,0 - 85,0 81,0 - 83,0 86,0 - 88,0 78,0 - 80,0 84,0 - 86,0	1270 1270 1220 1220 1180	800 800 800 800 800	77,5 - 80,5 75,5 - 77,5 84,5 - 87,5 68,0 - 71,0 84,5 - 87,5	148 PS / 140 PS / 156 PS / 135 PS / 152 PS /	0.100
-	1150 1150 1100 1075 1075	93,5 - 85,5 79,0 = 81,0 82,0 - 84,0 82,0 - 84,0 78,0 - 80,0	1165 1165 1115 1090 1090	800 800 800 800 800	84,5 - 87,5 72,0 - 74,0 84,5 - 87,5 84,5 - 87,5 76,0 - 79,0	152 PS / 142 PS / 147 PS / 144 PS / 136 PS /	n = 2200
	1050 1000 1000 900 875	76,5 - 78,5 82,5 - 84,5 77,0 - 79,0 82,0 - 84,0 68,0 - 70,0	1065 1015 1015 910 885	800 800 800 800 800	73,5 - 76,5 84,5 - 87,5 79,5 - 82,5 84,5 - 87,5 66,0 - 69,0	130 PS / 137 PS / 130 PS / 125 PS / 106 PS /	
	750 750	85,0 - 87,0 78,0 - 80,0	760 760	-	-	105 PS / 100 PS /	

#### Please note

- 1. \*\* With Liebherr exavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0,3 1,0 before the stop.
- LDA adjustement to be carried out 2. according to VDT-W- 420/305
- Dimension H = 22,5 mm = basic setting of LDA.3.

WPP 001/4 MB 2,0 g 4

5. Edition

En

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103 RSF 375/2250 M 19 Komb. Nr. 0 400 074 978

Sales model

0 400 074 977

supersedes 12.82 Daimler-Benz company

OM 615 44 kW (60 PS)

All test specifications are valid for Boson Fuel injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Porticiosing at prestroke

1,70-1,80 (1,65-1,85)

mm (from BDC)

18,5-21,5

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring preite 'icompensation	
'ev/min	mm	cm / 100 strokes	cm 1/100 strokes	mm	cm <sup>1</sup> /100 strokes	നന	
1	2	-3	4	2	3	ઝે	
1000	12,7 <sup>+0</sup> ,	3,2-3,3	0,25 (0,	3)			
375 1800 2200	6,9-7,	1 0,65-0,75	0,1 (0,1 0,25 (0, 0,25 (0,	3)			

Set uniform delivery according to the values in [

Checking values in brackets

#### **B.** Governor Settings

Lower rated s	peed		Upper rated s	peed		-Variations in ci	ontrol rod frav	
Degree of deflection	'Control rod	Rotational speed	Degree of deflection	Control rod travel	Rotational speed	:	Rotational speed	Cantrol rod trave
of control lever	mm	rev/min	ot control lever	mm	rev/min		rev min	mm
1	2	3	14	5	6	.7	8	9
13-17 (2)	7 0,9-7,   **	,0 300	>	< /,2-/,	6 2500	12 (13) (14)	100 1800 1000 Switching p	min. 20,3 12,2-12,4 12,7-12,8

## C. Settings for Fuel Injection Pump with Governor Mounted

Full-load d	mp 40°C (104°F)	Full-load speed (8a) regulation	Variations delivery	in fuel 17	, idie	Difference
revimin 1	cm²/1000 strokes	revimin	revimin	cm <sup>2</sup> /1000 strokes	revimin cm /1000 strokes	cm <sup>2</sup> /1000 strokes [8
2200	33,0-35,0 (32,0-36,0)	2500* RW 7,2-7,0	1000	(32,0-36.0)	375 6,5-7,5	1,0 1,5 2,5 siehe 3,0 Pkt. 8a

Checking values in brackets

ca : jpges (C) many d travel than in Column 2

1.84

- Position the idle-speed auxiliary spring at n = 385 min<sup>-1</sup> so that the control-rod travel is forced further by 0.1 0.2 mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff

  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min-1.

  Control-lever position 30°. Rotational-speed range 350 min<sup>-1</sup> 450 min<sup>-1</sup>.
- Control lever agains idle stop.

  At n = 375 min 1 and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

WPP 001/4 MB 2,4 j 3. Edition

En

PES 4 M 55 C 120 RS 106 RSV 350 - 1500 MOB 128 Komb.-Nr. 0 400 064 033

Sales model 0 400 064 035 supersedes 4.80 Daimler-Benz

OM 616 38 kW

1-3-4-2=0-90-180-270 + 0,5(0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

1,70-1,80 (1,05-1,05)

mm (from BDC) RW = 18.5-21,5 mm

Rotational	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque control valve)
rev/min	mm 2	cm·/100 strokes	cm <sup>:/</sup> 100 strokes 4	mm 2	cm: 190 strokes 3	mm 6
1500	12,8+0,1	3,7-3,8	0,25(0,3)			
350	6,8-7,0	8,0-6,0	0,1(0,15)	 		
1000	13,7-13,9		0,25(0,3)			
600	14,0-14,2		0,25(0,3)			
						<u> </u>

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

	rated speed Control rod travel mm	Control rod travel mm rev/min	Interme	equate rated	speed	Control lever detlection in degrees		rated speed Control fod travel mm	(3.)	que control Control rod travel mm
loose	<b>800</b>	0,3-1,0				ca. 18	350 350	6,4	1000	12,8-12,9
ca.53	1650-1	570 = 11,9 680 = 4,0 0,3-1,7					100 900 770-830	min.20,3 max. 1,5 2,5	1	14,0-14,2

the numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(29)	H-load stop	6 Rotational- speed limitat		el delivery aracteristics	Starting "	Jer dervery 5	43) 71	e stop  Control rod
rest on to	cm//1000 strokes	Note changed to 1 rev/min 3	revimin	cm:/1000 strokes 5	revimin	cm:r1000 strokes 7	rev/min 8	travel mm 9
1500	37,0-38,0 (36,0-39,0)	1550-1570*	1000 600	37,5-39,5 (36,5-40,5) 38,0-40,0 (37,0-41,0)	100 350	min. 53,0 6,0-8,0 (5,5-8,5)	350	6,9

Checking values in brackets

1 mm less control rod travel than col. 2

1.84

Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. 3 1980 by Robert Bosch GmbH. Postfach 50: 0-7000 Stuttgarf 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 2,4 K

superseass4.80

company Daimler-Benz

OM 616 44 KW

3. Edition

Testoil-ISO 4113

PES 4 M 55 C 320 RS 106 RSV 350...1750 MOB 129

Komb.-Nr. 0 400 064 034

1-3-4-2=0-90-180-270 -0,5(0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

1,70-1,80

mm (from BDCRW 18,5-21,5 Port closing at prestroke (1,65-1,85)

Rotational speed revimin	Control rod travel mm 2	Fuel delivery cm <sup>-/</sup> 100 strokes 3	Oifference cm / 100 strokes	Control rod travel mm 2	Fuel delivery cm·/100 strokes 3	Spring pre tensioning itorque control valve)
1730	13,1+0,1	3,85-3,95	0,25(0,3)			
3.70	6,8-7,0	0,6-0,8	0,1(0,15)			
1100	13,7-13,9		0,25(0,3)			
600	14,1-14,2		0,25(0,3)			\$

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated speed rev/min  gree of lection travel travel		Intermediate rated speed			Lower rated speed			(3)	rque controi   Control rod
vei n	travel	4	5	6	Control lever deflection in degrees 7	revimin 6	travel mm	revimin	travel mm
300	0,3-1,0				ca.18	350	6,4	1730	13,1-13,2 13,7-13,9
						900 350	max. 1,5 6,8-7,0	600	14,1-14,3
3	760-13 885-19	travel mm revimin 3 00 0,3-1,0 760-1780 = 12,2	travel mm revimin 3 00 0,3-1,0 760-1780 = 12,2 885-1915 = 4,0	travel mm rev.min 3 00 0,3-1,0 760-1780 = 12,2 885-1915 = 4,0	travel mm rev.min 3  00  0,3-1,0  760-1780 = 12,2 885-1915 = 4,0	travel	Tourised Control rod travel mm revimin 3 5 6 7 Control lever deflection in degrees 7 6 Control lever deflection in degrees 7 Ca.18 350  760-1780 = 12,2 885-1915 = 4,0 770-830	Control rod travel	Control rod travel mm revimin 3

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

(20)			Fuel delivery characteristics		Starting t	uel delivery (5)	Gontral rad		
rev/min	cm <sup>1</sup> /1000 strokes	changed to 1 rev/min 3	revimin	cm·/1000 strokes 5	rev/min	cm#1000 strokes 7	revimin 8	travei mm 9	
1730	38,5-39,5 (37,5-40,5)	1760-1780*	1100 600	37,5-39,5 (36,5-40,5) 38,0-40,0 (37,0-41,0)	100 350	min. 53,0 6,0-8,0 (5,5-8,5)	350	6,9	

Checking values in brackets

1 mm less control rod travel than col. 2

1.84

WP 001/4 MB 2,4 K 2

1. Edition

Testoil-ISO 4-113

PES 4 M 55 C 320 RS 106 Komb.-Nr. 0 400 074 081

RSV 400-2200 MOB 351

Sales model 0.400,074,0821-3-4-2 = 0-90-180-270 = 0,50 (0,75)

supersede 💆

Daimler-Benz

OM 616 53 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80 (1,65-1,85)

mm ifrom BCCRW = 20.0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Cantrol rod traver	Fuer delivery	Spring pre-tensioning (torque-control valve)
rev.min	mm 2	cm ~100 strokes	cm 100 strokes	   mm   2	cm /100 strokes	mm ō
2180	12,9+0,1	4,0-4,1	0,2(0,3)			:
400	6,4-6,6	0,6-0,8	0,1(0,15)			
1000	13,4-13,5		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Degree of	r rated speed Control rod travel		interm	ediate rate	ed speed	Control lever	Lower	rated speed Control rod travel	(3)	rque control Control rod travel
deflection of control lever	mm 2	mm rev/min	4	5	6	deflection in degrees 7	revimin 8	9	rev/min 10	mm 11
loose	800	0,3-1,0				ca.39	400	6,5	1000 1750	13,4-13,5 13,1-13,4
ca.70	2370-23	250 = 12,0 $390 = 4,0$ $0,3-1,7$					Set auxi control-	liary idle rod travel	spri	g at 2,0 mm

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	Test oil temp 40°C (104°F)		11.3411	ei delivery aractenstics	Starting f	uel delivery 5	4a idle stop	
Test oil ti	emp 40°C (104°F) cm-/1000 strokes 2	changes to + rev/min	rev/min cm://1000 strokes 4 5		rev/min	cm=1000 strokes 7		travei mm 9
2180	40,0-41,0 (39,0-42,0)	2240-2250*	1000	37,0-38,0 (36,0-39,0)	100 400	min. 53 6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rgd travel than col. 2

1.84

En

PES 4 M 55 C 320 RS 107 - 1 RSF 375/2250 M 17 Komb. Nr. 0 400 074 956 Sales model 0 400 074 957

supersede-5.83 company Daimler Benz OM 616 53 kW (72 PS)

1 - 3 - 4 - 2 0 - 90-180-270

All test specifications are valid for Posch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-ISO 4113

2,20-2,30 (2.15-2.35)

mm (from RDC) 18,5-21,5<sup>Control rad travel</sup>

Rotational speed	Control red travel	Fuel delivery	Difference	Control red travel	Fuel delivery	Spring pre-tensioning compensating valves
rev/mus	mm	cm /100 strijkes	cm1/100 strokes	mm	fcm 100 strokes	mm.
1	2	3	14	2	[3	6
1000	13,9+0,1	3,9-4,0	0,25(0,3)		,	J
375 1800 2200	6,5-6,7	i	0,1 (0,15) 0,25(0,3) 0,25(0,3)	!		
l		i 4 •		:	•	
Set uniform delivery	y according to t	per Anjanez in Company			C	hecking values in brackets

#### **B. Governor Settings**

11.1					3			•		
Lo	werr	atedsp	ieed		Opper rated st	need .		"Variations in Co	introlled frav	ret
det	gree Hech Jonli	11(1	Control rad travel	Rotational speed	Degree of deflection of control	Control rod	Rotational speed		Rotational speed	Control rod travel
lev	35		mm	Irov min	lever	mm	ho, our		1195 ItoH	lmm
1			2	3	4	5	16	,7	8	a
9	-13	3 (1)	min.11,		50 (7	13,0-13 8,7-9,1	1.7	12	100	min. 20,3
			6,5-6,7	375 400	8 (9)	0-1,0	2950	(13)	1800	13,3-13,5 13,9-14,0
		(S)	2,5	720 - 820	(10)	)	! !	6	Switching p	oint

#### C. Settings for Fuel Injection Pump with Governor Mounted

Full load d	elivery (19)	Full load speed (8a)	Variations delivery	in fuel (17)	Starting	fuel delivery	
Test oil ter	np 40 C (104 F)			[ [18]	1		Difference
rev'min	cm1/1000 strokes	rév/mm	revimin	cm /1000 strokes	revimin	cm1/1000 strokes	cm 1/1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,7-9,1	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0
į			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 1,5 (15)
			 	T T	2500	23,0-27,0 (22,0-28,0)	2,5 See 3,0 Point 8 a

Checking values in brackets

\*ca. 4,2 less control rod travel than in Column 2

1.84

BOSCH

- 1. \*\* Position the idle-speed auxiliary spring at n =  $385 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 0.2 mm.
- Adjusting the idle control-lever position:
   At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min-1.
  Control-lever position 30°. Rotational-speed range 350 min-1 450 min-1.
- 4. Testing the pneumatic shutoff box

Control lever against idle stop.

At n =  $375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Testoil-ISO 4113

## **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 2

2. Edition

PES 5 M 55 C 320 RS 108-1 RSF 350/2300 M 16

Komb. Nr. 0 400 075 987 Sales model 0 400 075 988

superseder5.83 company Daimler-Benz engine OM 617 65 kW (88 PS)

1 - 2 - 4 - 5 - 3

0 = 72-144-216-288:0,50 (0,75) Altiest specifications are valid for Posch Euel Injection Pump. Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,20-2,30 (2,15-2,35)

18,5-21,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control red travel	Fue delivery	Suring pre-tensioning compensating valves
rev'min	mni	cm 7100 strokes	cm 1/100 strokes	irnm	lcm 100 strokes	mm
	2	3	la .	2	3	:6
1000	13,9 <sup>+0</sup> ,1	3,9-4,0	0,25(0,3)			
350 1800 2200	6,5-6,7	0,6.0,7	0,1 (0,15) 0,25(0,3) 0,25(0,3)	ı	:	

Set uniform delivery according to the values in [

Checking values in brackets

#### **B.** Governor Settings

Eow€≝ rated s	peed		Upner rated sp	eed		Variations in contr	rot roat trave	21
Degree of deflection of control	Control rod travel	Rotational speed	Degree of deflection of control	Control rod	)Rotational speed. [		elational seed	(Control rod trave)  -  -
jlevet	mm	trev min	la-Vest	mm	nov min	114	es emer	mm
11	.2	3	-4	5	6	7		9
9-13 (2)	min.10, max.10, 6,5-6,7 **	.0 300	50 8	0-1,0	5 2500	(12) (13) (14) (6)	100 1800 1000 with hing po	min. 20,3 13,5-13,7 13,9-14,0

## C. Settings for Fuel Injection Pump with Governor Mounted

Full load di	alivery (19)	Full-load speed (8a)	Variations	in fuel (17)	Starting (	luel delivery	
Lest oil ten	np 40 C (104°F)		i	[ [18]		:	Difference
rev/min	cm /1000 strokes	rev/min	revimin	cm1/1000 strokes	revenio	cm /1000 strokes	cm <sup>3</sup> /1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,3-42,5)	2500* RW 9,1-9,5		39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 (2)
			1000	39,0-40,0 (38,0-41,0)		6,0-7,0 (5,5-9,0) 23,0-27,0 (22,0-28,0)	1,0 1,5 2,5 See
							3,0 Point 8 a 16

Checking values in brackets

Ca.4,0 less control rod travel than in Column 2

1.84

**BOSCH** 

Geschaftsbereich KH. Kundendienst. Kfz. Ausrüstung. 1980 hv. Rohert Bosinh GmbH. Postfach 50. D. 7000 Stuttgart L. Printed in the Federal Republic of Germany. Imprime en Republique Federale d Ailemagne par Robert Bosch. CmbH.

- 1. Position the idle-speed auxiliary spring at  $n = 385 \text{ min}^{-1}$  so that the control-rod travel is forced further by 0.1 0.2 mm.
- 2. Adjusting the idle control-lever position:

  At 1000 min<sup>-1</sup>, control-rod travel 1.9 2.0 mm.
- Testing the idle-speed auxiliary spring shutoff
  Control-lever position 47°. No change in control-rod travel after switching point up to 550 min-1.
  Control-lever position 30°. Rotational-speed range 350 min-1
   450 min-1
- 4. Testing the pneumatic shutoff box
  Control lever against idle stop.

At  $n = 375 \text{ min}^{-1}$  and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

40

WPP 001/4 MB 3,0 V 1 1. Edition

<u> Eı</u>

PES 5 M 55 C 320 RS 109

RSV 350-1650 MOB 350-1

Supersede Daimler-Benz

Komb.-Nir. 0400 075 003

Sales model

0 400 075 004

company OM 617 engine 57 kW

\$1-2-4-5-3=0-72-144-216-288 ±0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,20-2,30 Forticiosing at prestroke (2,15-2,35)

mm (from BDC RW = 20.0 mm

Rotational speed rev/min 1	Control rod travel	Fuel delivery cm <sup>1/1</sup> 100 strokes 3	Ditterence cm:/ 100 strokes 4	Cuntrol rod travel mm	Fuel delivery cm :100 strokes 3	Spring pre tensioning intorque-control valve) mm
1530	13,5+0,1	4,0-4,1	0,2 (0,3)			
350	6,2-6,5	0,6-0,8	0,1 (0,15			
750	14,0+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Degree of deflection of control lever	deflection of control mm mm revimin			egiate rated	speed 6	Control- lever deflection in degrees	Control rod travel ection revimin mm			que control Control rod travel mm
loose	800	0,3-1,0				ca.40	350	6,2-6,5	750 1300	14,0-14,1 13,6-13,9
*ca.75	1780-1	6680=12,5 1800= 4,0 0,3-1,7	S	et aux	iliary	idle sp	ring at	2.0 mm co	trol-	rod travel.

The numbers denote the sequence of the testsAdjustment angle = 0° = horizontal control lever position.

## C. Settings for Fuel Injection Pump with Fitted Governor

2b Full Hoads stop Test on temp: 40 C (104 F)		6 Rotational speed imitat	spæed imitat Caracteristics			uer server, (5)	Gonto rod		
rev min	cm 1000 strokes	changed to rev min	rev m.n	cm 1000 strokes	rev min	cm 1000 strokes	re. mir	trave mm	
1630	40,0-41,0 (39,0-42,0)	1670-1680*	750	39,0-41,0 (38,0-42,0)	100 350	min. 53,0 6,0-8,0 (5,5-9,0)			

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

BOSCH

Geschaftsbereich KM. Kundendienst. Kfz. Ausrüstung. 1980 by Robert Bosch GmbH. Postfach 50. D-7090 Stuttgart 1. Printed in the Federal Republic of German, Imprime en Republique Federale d Allemagne par Robert Bosch GmbH.

WPP 001/4 MB 3.0 v 2

1. Edition

PES 5 M 55 C 320 RS 109

RSV 400-2200 MOB 352

supersed Daimler-Benz

Komb.-Nr. 0 400 075 001 Sales model

0 400 075 002

company UM 617 engine 65 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288 - 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,20-2,30 Port closing at prestroke (2,15-2,35)

mm . trom BD W=20.0mm

Control rori	Fuel gelivery	Difference	Control rod traver	Fuel delivery	Spring pre tensioning itorque-control valvei
mm 2	cm·/100 strokes	cm 100 strakes	mm 2	om 100 strokes	mm 6
13,2+0,1	4,1-4,2	0,2(0,3)			
6,2-6,4	0,6-0,8	0,1(0,15)			
13,9+0,1		0,25(0,3)			
,					
	mm 2 13,2+0,1 6,2-6,4	mm 2 cm 100 strokes 3 13,2+0,1 4,1-4,2 6,2-6,4 0,6-0,8	travel mm 2 cm-/100 strokes 100 strokes 4  13,2+0,1 4,1-4,2 0,2(0,3) 6,2-6,4 0,6-0,8 0,1(0,15)	travel mm 2 cm 100 strokes 100 strokes 2 mm 2 13,2+0,1 4,1-4,2 0,2(0,3) 6,2-6,4 0,6-0,8 0,1(0,15)	travel mm 2 cm 100 strokes 100 strokes 2 cm 100 strokes 2 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 2 cm 100 strokes 2 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 2 cm 100 strokes 2 cm 100 strokes 2 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 2 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 3 cm 100 strokes 2 cm 100 strokes 3

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Degree of deflection of control lever	Control rod travel mm	rev.min   Control rod   travel   mm rev/min   3	Interme	diate rated	speed	Control lever deflection in degrees	Lower rev min 8	rated speed  Control rod  travel  mm  9	!(3)	rque contro Contro: rod travei mm
100se ca. 70	2400-2	420 = 4.0	Se	t auxi	liary	ca.39	400 ring at	6,3 2.0 mm cor	1000 1500 trol-1	13,9-14,0 13,5-13,8 od travel.
(2a)	2550 =	0,3-1,7								

The numbers denote the sequence of the tests Adjustment angle = 0° = horizontal control lever position.

#### C. Settings for Fuel Injection Pump with Fitted Governor

	cm: 1000 strokes	Rotational speed imitat Note changed to review in 3		er derivery aracteristics cm 1000 strokes	Starring *	uer ne very 5	40	mm   tr3ve   Control
2180	41,0-42,0 (40,0-43,0)	2240-2250*	1000	39,0-41,0 (38,0-42,0)	100 400	min. 53 6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

WPP 001/4 MB 3.0 v 3

1. Edition

PES 5 M 55 C 320 RS 109-1

Komb.-iv. J 400 075 005

Port closing at prestroke

0 400 075 006

Daimler-Benz OM 617

Sales model

65 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288 - 0,50 (0,75)All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,20-2,30

(2.15-2.35)

mm (from BDC) RW = 20,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod traver	Fuel delivery	Spring pre tensioning itorque control valvei
rev/min	mm (2)	cm:/100 strokes	cm <sup>-/</sup> 100 strokes	mm .	cm -100 strokes	mm
1	2	3	4	2	3	6
2180	13,2+0,1	4,1-4,2	0,2(0,3)			
400	6,2-6,4	0,6-0,8	0,1(0,15)			
1000	13,9+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

	1 Uppe	r rated speed	rev/min	intermed	nate rated	speed	4	Lower	rated speed	133	rque control	
	Degree of deflection of control lever	Control rod travel	Control rod traver mm revimin				Control lever deflection in degrees	rey.min	Control rod travel	rev, min	Control rod travel mm	
	1	2	3	4	5	[6	7	8	9	10	1'	
	loose	800	0,3-1,0				ca.39	400	6,3	1000 1500	13,9-14,0	
*		2240-229 2400-249 2550 =		S	et aux	(iliar	y idle s	pring at	2.0 mm c	ontrol	rod travel	

The numbers denote the sequence of the \*s'Adjustment angle = 0° = horizontal control lever position.

#### C. Settings for Fuel Injection Pump with Fitted Governor

(20)	unicad stop emp. 40. Cl/104. F	6 Rigitational speed imitar	le derven. Paracteristics	3 e Star ng r	JE 78 -81. (5)	4a) riektris (Contro ma		
rev min	cm 1000 strokes	changed to tev min	rev min	om 1000 strokes 5	rev mir	om 1000 strokes	revimn 8	traver mm g
21战0	41,0-42,0 (40,0-43,0)	2240-2250*	1000	39,0-41,0 (38,0-42,0)	100	min. 53 6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control rod travel than co. 2

1.84

BOSCH

WPP 001/4 MB 3,0 V 1. Edition

PES 5 M 55 C 320 RS 109-1

RSV 350-1650 MOB 350-1

Komb.-. 0 400 075 007

0 400 075 008 Saies model

Daimler-Benz OM 617

57 kW

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288 - 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

2,20-2,30 (2,15-2,35)Porticiosing at prestroke

mm tram BDC RW = 20,0 mm

Rotational Speed	Control rod	Fuer derivery	Oitterence	C introl to 1 travel	Fuel delivery	Spring pre rensioning itorque control valver
rey/min	mm 2	cm=/100 strakes	cm 100 strakes 4	2	cm +100 strokes	ġ m
1630	13,5+0,1	4,0-4,1	0,2(0,3)			
350	6,2-6,5	0,6-0,8	0,1(0,15)			
750	14,0+0,1		0,25(0,3)			
				<u> </u>		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated speed rev/min  Degree of deflection of control rod travel mm rev/min  lever 2 3			Intermed	iale rated	speed	Control lever detlection in degrees			(a)	rque contro Control rod travel mm
loose	800	0,3-1,0		<u> </u>		ca. 40	350	6,2-6,5	750 1300	14,0-14,1 13,6-13,9
* a .75°	1780~18	580 = 12,5 300 = 4,0 0,3-1,7	S	et aux	iliar	y idle s	pring at	2.0 mm cc	ntrol	rod travel

The numbers denote the sequence of the tests  $\star$  Adjustment angle =  $0^\circ$  = horizontal control lever position.

## C. Settings for Fuel Injection Pump with Fitted Governor

(2b) F		6 Rotations speed mitat	LJGI	e gewerk aracterstics	Staring *	uel nelivery 5	<b>4a</b> 7	e stor
Test oil to	cm /1000 strokes	Note changes to rey min	rev min	cm 1000 strokes	rev min	cm *000 strokes	rev m r	Control rod travel min 9
1630	40,0-41,0 (39,0-42,0)	1670-1680*	750	39,0-41,0 (38,0-42,0)	100 350	min. 53,0 6,0-8,0 (5,5-9,0)		

Checking values in brackets

\* 1 mm less control tod travel than col. 2

1.34

WPP 001/4 PEN 6,0 e

3. Edition

PES 6 MW 100/320 RS 1004 0 403 476 011

RSV 325-1250 MW/308

superseaf.5.83 Volvo/Penta

TD 60 D 118 kW (160 PS)

1-5-3-6-2-4 0-60-120-180-240-300 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Beriches and Testers

## A. Fuel Injection Pump Settings

(2,75-2,95)Port closing at prestroke

mm (from BDCRW 9,0-12,0 mm

Rotational	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Suring pre tensioning storque-control valvei
rev/min		cmi/100 strokes	cm <sup>-/</sup> 100 strokes	mm	cm:/100 strokes	mm
1	2	3	4	2	3	6
1000	10,5+0,1	8,95-9,15	0,35(0,6)			]
325	4,3-4,5	1,0 - 1,3	0,35(0,55			

Adjust the fuel delivery from each outlet according to the values in

#### B. Governor Settirigs

1 Uppe	er rated spived	rev/min	Interm	regiate rat	ed speed	(4)		rated speed	(3)	rque control
Degree of deflection of control lever	Control roc travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	Control rod travet mm
1 <sub>oose</sub>	800	0,3-1,0	1			ca. 26	325	3,9	350	11,1+0,1
	x =	4,0					325	4,3-4,5	500	10,7-0,1
ca.49	1335-13	330 = 9,6 365 = 4,0 0,3-1,7					450-510	= 2,0	1250	10,5+0,1

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	ur-load stop	6 Rotational- speed limital	11.32	uel delivery naracteristics	Starting f	uel delivery 5	<b>43</b> idh	e stop I Control rod
Test on te rev/min	emp 40°C (104°F) cm <sup>1/1</sup> 1000 strokes	Note changed to 1 rev/min 3	rev/min	cm:/f000 strokes 5	rev/min 6	cm=1000 strokes	rev/min	travel mm
1000	89,5-91,5 (87,5-93,5)	1290-1300*			100 325	min. 140 10,0-13,0 (7,5-15,5		4,4

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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WPP 001/4 Vol. 6,0 p 3. Edition

En

Testoil-ISO 4113

PES 6 MW 100/320 RS 1004 RSV 650-750 MW 4/311-1

0 403 476 009

supersede 5.82 company Volvo TD 60 B 6 84 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Port closing at prestroke

(2,75-2,95)

mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>1</sup> /100 strokes	cm <sup>-/</sup> 100 strokes 4	mm 2	cm:/100 strokes	mm õ
700	10,9+0,1	8,1-8,3	0,35(0,6)			]
650	5,0-5,1	1,7-2,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe Degree of	Control rod	rated speed rev/min Control rod   Control rod   travel   travel		ediate rati	ea speea	(4) Control		rated speed Control rod travel	(3)	Control rod
deflection of control lever	mm 2	mm /ev/min	4	5	6	lever deflection in degrees 7	rev/min 8	mm 9	rev/min 10	mm 11
loose	800	0,3-1,0				ca. 34	650	4,5	375	11,9+0,6
	X =						650	5,0-5,1	470	10,9+0,1
ca.40		0 = 9,9 0 = 4,0 0,3-1,7					690-75	0 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(20)	emp 40°C (105°F)	Rotational- speed limitat	10.344	el delivery aracteristics	Starting I	uel delivery 5	(Cantrol rod	
rev/min	cm <sup>3</sup> /1000 strokes	changed to ) rev/min 3	revimin 4	cm v1000 strokes 5	rev/min	cm <sup>3</sup> /1000 strokes 7		travel mm 9
700	81,0-83,0 (79,0-85,0)	750-760 *						

Checking values in brackets

1 mm less control rod travel than col. 2

1.84

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WPP 001/4 PEN 6,0 r 4 1. Edition

PES 6 MW 100/320 RS 1004 RSV 650-750 MW 4/311-3

0 403 476 019

Testoil-ISO 4113

Volvo-Penta

TD 60 DG 86 kW

An fast specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

# A. Fuel Injection Pump Settings

(2,75-2,95)

mm itrom BDC: RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>1/100</sup> strokes 3	Difference cm: 100 strokes 4	Control rod travel mm 2	Fuel delivery cm /100 strokes 3	Spring pre tensioning storque-control valvei mm
700	11,3+0,1	9,3-9,5	0,35 (0,6			•
650	4,5-4,6	1,7-2,1	0,35 (0,5	5)		
	1					

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	r rated speed Control rod travel mm		Interm	ediate rate	d speed	Control lever deflection in degrees 7	Lower revimin 8	rated speed Control rod travel mm	3.) <sup>10</sup> rev/min 10	rgue controi Control rod travel mm
loose	800	0,3-1,0				ca. 34	650 650	4,0 4,5-4,6	375 470	11,9-12,5
ca.40	750-76 760-79 930=0						690-	750 = 2,0		

The numbers denote the sequence of the tests

## C. Settings for Fuel Injection Pump with Fitted Governor

np 40°C (104°F) cm <sup>2</sup> /1000 strokes	Rotational- speed limitat Note changed to ) rev/min	11.01.01.0		Starting fuel gelivery 5 4a Idle stop Idle  rev/min cm-1000 strokes rev/min mm				
2	3	4	5	6	7	8	9	
93,0-95,0 (91,0-97,0)	750-760*							
						!   		
	np 40°C (104°F) cm <sup>2</sup> /1000 strokes 2	speed limitat  Note changed to ) rev/min  3	Note changed to ) rev/min rev/min 4	speed imital characteristics  Note changed to ) rev/min rev/min cm <sup>3</sup> /1000 strokes  2 3 4 5	Note changed to ) rev/min cm <sup>-1</sup> /1000 strokes rev/min 6	speed limital Characteristics  Note changed to ) rev/min rev/min cm/1000 strokes  3 4 5 6 7	speed limital Speed limital Characteristics  Note changed to ) rev/min rev/min cm <sup>-1</sup> /1000 strokes 7 rev/min 8	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

Geschaftsbereich KM. Kundendienst. Kfz-Ausrustung. 2. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany imprime en Republique Federale d'Allemagne par Robert Bosch GmbH.

WPP 001/4 PER 8,8 a 1

6. Edition

Testoil-ISO 4113

PES 8 MW 100/320 RS 1011 ROV 375... 1300 MW 18-1 Komb.-Nr. 0 403 448 102 supersedes 5.82 Perkins AV 8.540 engine 138 kW

Port-closing mark on rear side

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres		,50-2,60 ,45-2,65)	mm (from BDC)	bei RW =	9,0-12,0 mm	
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes 4	rnm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1300	10,1+0,	1 9,2-9,4	0,3 (0,6			
375	5,0-5,	1 1,05-1,45	0,3 (0,5	\$)		

0.5 (0.7)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

800

10,1+0,

Upper rated s	peed		Intermediate	rated sp	eed	Lower rated	speed		Sliding sl	Sliding sleeve travel	
	rev/miñ Control	Control rod ta	Degree of deflection		Control rod travel	Degree of deflection		Control rod travel			
	rod travel	mm rev/min (2a)	of control lever	rev/min	mm 4	of control lever	rev/min	тт 3	rev/min	mm	
1	2	3	4	5	6	7	8	9	10	11	
max.	1300	15,2-17,8	30-50	700	4,7	ca. 11	100	min. 6,5	1390 1410		
	1600	0,0-1,0		450	8,3		375	4,9-5,0	515 575	-	
ca. 64	9,1 4,0	1365-1375 1425-1455				<u>3a</u>	470-	530=2,0	375	1,2-1,3	

Torque control travel a =

шш

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil ten		Rotational-speed (26) limitation intermediate speed	Fuel deliv	ery characteristics 58 peed 50	Starting idle switchin		Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 46	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1300	92,0-94,0 (90,0-96,0)	1365-1375*	800	87,0-91,0 (85,0-93,0)	100 375	min. 140 (19 - 21 RW) 10,5-14,5 (8,0-17,0)		

Checking values in brackets

\* 1 mm less control rod travel than col 2

1.84

#### Port closing and TDC markings

 $^{\rm O}$  camshaft between port-closing and TDC Comb.-No.

at control-rod travel 10,5 mm ... 102

at control-rod travel
21 mm (Start)

110

17°

WPD 001/4 RVI 8,8k 6. Edition

PES 6 MW 100/320 PS 1016

ROV 360-1300 MW 25

Komb.-Nr. 0 403 446 123

superseges 1.33 company RVI MIDR06.02-12 125 kW (170 PS)

Ail test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Port-closing mark 10,5° after port closing.

A. Fuel Injection Pump Settings

Port closing at prestroke (2.95-3.15)

mm (from BDC) RW = 9,0 - 12,0

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min 1	mm 2	cm <sup>3</sup> /100 strokes 3	cm³/ 100 strokes 4	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6
1300	11,1+0,	1 8,95-9,15	0,35(0,6			
300	5,7-5,8	0,95-1,35	0,35(0,5	5)		
900	11,1+0,1		0,5 (0,7	<b>þ</b>		
500	9,8-9,9					

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

Upper rated s	peed		Intermediate	rated spe	ed	Lower rated	speed		Slidings	leeve travel
	rev/min Control rod travel mm	Control rod travel mm rev/min (28)	Degree of deflection of control lever	rev/mir:	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1300 1650	15,2-17,8 0 - 1,0				ca.13	200 300	max. 7,5 5,8-5,9		
ca.62		1355-1365 1485-15 <b>1</b> 5				340-600		•		
						(3a)				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-rod Test oil ten		Rotational-speed (20) ilmitation intermediate speed	Fuel deliv	very characteristics (58)	Starting lidle switching	. •	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strok <del>e</del> s	rev/min	travel mm
LDA 1300	0,67 bar 89,5-91,5 (87,5-93,5)	1355-1365*	LDA 900 LDA 500	0,67 bar 85,0-89,0 (83,0-91,0) 0 bar 56,0-58,0 (54,0-60,0	100 300	95,0-105,0 9,5-13,5 (7,0-16,0)		

Checking values in brackets

1 mm less control rod travel than col 2

## D. Adjustment Test for Manifold Pressure Compensator

: Gauge pressure — bar Gau	ge pressure : par mm
profession of the desirement was a part of the color of t	
RS 1016 + MW 25 0,23	10,7-10,9 0,67 11,1-11,2
	0 9,8=9,9 0,20 10,2=10,3

Notes

(1) when n

revimin and gauge pressure -

par i maximum full-load control rod travell

# Test Specifications Fuel Injection Pumps 2 MPP 001/4 3. Edition and Governors

KHD 9,6g

Testoil-ISO 4113

PE 6 MW 100/720 LS 1017 RO 300/1250 MW 26

En

11.82 supersedes

KHD company

F6L413FX engine

150 kW (205 PS)

0 403 546 003

1 - 6 - 5 - 4 - 3 - 2  $0 - 75 - 120 - 195 - 240 - 315 \stackrel{+}{-}0,50$  (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

## A. Fuel Injection Pump Settings

Control rod

mm

Port closing at prestroke

Rotational speed

rev/min

1250

350

700

(3,05-3,25)Fuel delivery

13

11 9+0 1 11 1-11

8,2-8,4 1,25-1,65

cm<sup>3</sup>/100 strokes

mm (from BDC) DLL -- 0 0 . 12 mm

'	min (mosti coci)	W = 9,0	12 111111	
	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
İ	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
	4	2	3	6
	0,5(0,6)			
	0,35(0,5			
	0,5 (0,7	þ		•

Adjust the fuel delivery from each outlet according to the values in

12,7+0,1

#### **B.** Governor Settings

PRG che	Checking of slider PRG check Control rod travel rev/min mm 1 2		peed regulation int Test spec Control rod travel mm mm 4 5		rev/min	ns 4 Setting p		Control Control travel		Control rod travel mm	
600	19,2-20,8	600	20,0	!	1295-1310 1345-1375	1	8,3	ł	min.9,9 8,2-8,4	700 1 850	12,7-12,8 12,4-12,5
1450	0,0-1,0			4,0	1343 1373			1	440 = 2,0	1100	11,9-12,0

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de governor de Test oil ten	elivery on control lever np. 40°C (104°F)	Control rod stop 3a	Fuel delive	ery characteristics 3b	Starting full	Jel delivery  Control  Od Travel
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min 6	cm <sup>3</sup> /1000 strokes / mm
1250	111,0-113,0 (109,0-115,0)		700	109,5-113,5 (107,5-115,5)	<b>3</b> 50	126,5-136,5 123,5-139,5) 12,5-16,5 (10,0-19,0) 70 (80-300)

Checking values in brackets

40

WPP 001/4 RVI 5,5 a

2. Edition

En

PES 6 MW 80/320 RS 1104 RSV 300-1450 MW 2/801

0 403 476 013

supersedes 5.83 RVI

angine 97,8 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Beriches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

Testoil-150 4113

(1.70-1.90)

mm strom BDC.RW = 9,0-12,0 mm

Rotational	Control rod	Fuel delivery	Difference	Control rod travei	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm1/100 strokes	cm <sup>-r</sup> 100 strokes	mm 2	cm v100 strokes	mm 6
900	10,4-10,5	5,05-5,25	0,25(0,4)			
300	4,7-4,9	0,85-1,15	0,2(0,35)			
1450	9,4-9,5		0,35(0,45)			

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	rev/min	Interm	ediate rate	d speed	(4)	Lower	rated speed	Torque control		
Degree of deflection of control lever	Control rod travel mm	control roa				Control- lever deflection in degrees	rev/min	Control rod travel	revimin	travel mm	
1	2	3	4	5	6	7	8	9			
loose	800 x =	0,3-1,0 4,0				ca. 20	300 250	4,8 max. 8,4	900 1450 1150	10,4-10,5 9,4-9,5 9,6-9,8	
ca.58	8,4 3,9 0-1,0	1515-1525 1555-1585 1650									

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(29)	il-load stop	6 Rotational- speed limitat				ting fuel delivery 5 4a lgle s		
Test oil te rev/min	cm <sup>-/</sup> 1000 strokes	changed to 3		cm <sup>2</sup> /1000 strokes 5	rev/min	cm <sup>1</sup> /1000 strokes 7		travel mm 9
900	50,5-52,5 (49,5-53,5)	1515-1525*	1450	54,0-56,0 (52,0-58,0)	300	max. 15 mm RW 75,0-85,0 (70,0-90,0 8,5-11,5 (7,0-13,0	)	

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84

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40

WPP 001/4 IHC 7,6 a 3. Edition

Ê١

PES 6 MW 100/320 RS 1504

RSV 350 ... 1250 MW 2/305 R DHK 1 688 901 016

0 403 476 004

207 + 3 bar

company IHC

engine DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

3,20-3,30

Porticio ling at prestroke

Testoil-ISO 4113

(3,15-3,35)

mm (from BDC)

/ 10,5 mm RW

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre tensioning (torque control valve)		
rev/min	mrn 2	cmi¥100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6		
1250	7,3 +0,2	6,9 - 7,1	0,3 (0,5)					
350	5,5 - 5,7	1,8 - 2,2	0,3 (0,5)					
1000			0,3 (0,5)					
800			0,3 (0,5)			j		

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

1 Uppe	r rated speed	revimin	Interme	diate rate	a speea	4	Lower	rated speed	(3) 10	rque control
Degree of deflection of control	Control rod travel	Control rod trave! mm rev/min				Control lever deflection	tev/min	Control rod travet mm	rev-min	Control rod travel
lever	2	3	4	5	6	in degraes 7	ខ	y	10	11
loose	800	0,3-1,0				ca. 32	350	5,6	1100	7,3-7,5
			1				100	min. 19	1000	7,8-8,0
ca.60	1360-13	310=6,4 390=3,1 3,3=1,7					350 430-490	5,5-5,7 = 2,0	800 500	8,5-8,7 8,6-8,8

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

(20)	ill-load stop emp 40 C (104 F)	Rotational- speed limitat	limitat characteristics		Starting f	uel delivery 5	(4a) Idl	e stop  Control rud
revimin	cm³/1000 strokes 2	changed to 1 rev/min 3	rev/min 4	cm <sup>3</sup> 1000 strokes 5	rev/min	cm#1000 strukes 7	revimin 8	travel mm 9
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000 800	76,0-78,0 (75,0-79,0) 82,5-84,5 (81,5-85,5)	100 350 1375	min.140 18,0-22,0 (17,0-23,0) 25,0-37,0 (24,0-38,0)		5,6

Checking values in brackets

\* 1 mm less control rod travel than col. 2

1.84



WPP 001/4 IHC 7.6b

3. Edition

En

PES 6 MW 100/320 RS 1504 RSV 350 ... 1200 MW 2/306 R

0 403 476 005

DHK 1688 901016 207 + 3 bar

supersedes3.80 company IHC DT 466

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

3,20-3,30 (3,15-3,35)

mm (from BDC) bei 10.5 mm RW

Rotationa	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
revimin		cm:/100' strokes 3 #	cm <sup>-/</sup> 100 strokes 4	mm 2	cmi/100 strokes 3	mm 6
1200	7.4+0.2	6.5-6.7	0,3 (0,5)			
350	5,7-5,9	1,8-2,2	0,3 (0,5)			
1000			0,3 (0,5)			
800			0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Uppe	r rated speed	rev/min	interme	diate rated	speed	(4)	Lower	rated speed	1 3 /	rque control
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	4	5	6	Control lever deflection in degrees 7	rev/min	Control rod travel mm	rev/min	travel mm
loose	800	= 0,3-1,0				ca. 32	350 100 350	5,8 min. 19 5,7-5,9	1100 1000 800	7,5-7,7 8,1-8,3 8,6-8,8
ca. 60	1310-1	260=6,5 340=3,1 0,3-1,7					430-4		500	8,7-8,9

The numbers denote the sequence of the tests

# C. Settings for Fuel Injection Pump with Fitted Governor

(2)	il-load stop	6 Rotational- speed limitat	(3a) Fu	el delivery aracteristics	Starting fo	nei delineux (2)	(43) Idle Stop		
rest oil te	cm <sup>-/</sup> 1000 strokes	Note changed to 1 revimin 3		cm <sup>11</sup> 1000 strokes	revimin 6	cm=1000 strokes 7		travel mm 9	
1200	65,0-67,0 (64,0-68,0)	1250-1260*	1000 800	(71,0-75,0)	100 350 1325	min. 140 18,0-22, (17,0-23, 24,0-36, (23,0-37,	<b>p</b> 0) <b>p</b>	5,8	

Checking values in brackets

\* 1 mm less control rod travel than col 2

Geschaftsbereich KM. Kundendienst. Ktz-Ausrustung. 1 1980 by Robert Bosch GmoH. Postfach 50. D-7000 Stuttgart : Frinted in the Federal Republic of Germany Imprime en Republique Federale d Allemagne par Robert Bosch GmbH.

WPP 001/4 MWM 39,8 b 2. Edition

En

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 806 046 (1) 0 401 876 214 (2)

A. Fuel Injection Pump Settings

0 401 876 214 (2) 0 401 816 052 (3)

Port closing at prestroke

2,3 - 2,4

(2,25-2,45)

mm (from BDC) be i RW = 21.0 mm

Rotational speed	Control rod travel	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel	Fuel delivery  cm³/100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	ŭ.
700	13,0+0,1	26,0 - 26,4 (25.7 - 26,7)	(0,9)			
300	5,5-5,7	1	0,8 (1,2)	I		
		assemb	only appl y 1 688 9 1 680 750	101 019 a	nozzle-and-ho nd fuel-injecti	lder on test

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Upper	rated speed		Intermediate	rated spe	ea	4 Lowe	r rated spe		3 Torque control		
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	/	0	3	10	'	
lose	800	0,3-1,0	-	-	-	cā.29	300	5,1		13,0+0,	
	X =	5,25					100	5,5-5,7		14,2+0, 13,0+0,	
ca.70	12,0 4,0 980	790 - 800 815 - 845 0,3 - 1,7						5=2.0 mm			

The numbers denote the sequence of the tests

without (1), (3) and

## C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-to:	ad stop	6 Rotational- speed limitat		l delivery racteristics	Starting tyek delivery Idle XXXXXXX			(5a) Idle stop		
Test oil temp rev/min	0 40°C (104°F) cm³/1000 strokes 2	Note- changed to rev/min 3	revimin	cm³/1000 strokes 5	rev/min	controds sinches 7 mm RW	rev/min 8	travel mm		
in ac	full-load deli ccordance with s (1) and (2)	the engine	inspec	tion sheet.		19,5-21,0		result than col 2		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(2)

# toil-ISO 4113

# **Test Specifications Fuel Injection Pumps** and Governors

WPP 001/4 MWM 19.9 b Edition

En

(1) PE6P 120 A 320 RS 353 (2) PE6P 120 A 300/3 RS 342

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

RSUV 300-750 P 9 A 333/1 R supersedes 8.82

company MWM - Südbremse

D/TD/TBD 601-6

601-6 S

Komb.-Nr. 0 401 876 215 (1) 0 401 816 053 (2)

All test specifications are valid for Bosch Fuel-Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,3-2,4mm (from BDQW=19.5 - 22.5 mm Port closing at prestroke (2.25-2.45)

Rotational speed	Control rod travel	Fuer delivery	Oifference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
700	13,0+0,1	26,0 - 26,4 (25,7 - 26,7-)	0,5 (0,9)			
300	5,5-5,7	2,6 - 3,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in [

#### **B.** Governor Settings

(1)

Upper Degree of deflection of control lever	rated speed rev/min 2	Control rod travel mm	Intermediate Degree of deflection of control lever	rated spe rev/min 5	Control rod travel mm	Lower Degree of deflection of control lever	rev/min	control rod travel mm	3 Tor	cque control Control rod travel mm
loose	800	0,3-1,0	-	-	-	ca.29	300	5.1	•	13,0-13
70	x = 12.0=7	5,25					100 300	5,5-5,7 315-375	450 325	13,0-13
ca.70	4,0=8	15-845 ,3-1,7					2,00	313-373		

The numbers denote the sequence of the tests

without (2) and

C. Settings for Fuel Injection Pump With Fitted Governor

2 Full-loa	nd stop	( ) Holdhoner		Starting Idle	fuel delivery	(5a) Idle stop		
	.40°C (104°F) cm³/1000 strokes 2	Note: changed to . rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	rev/min	\$ <b>\%\%\%\%\</b> \$\%\%\%\%\%\%\%\%\%\ \$\%\%\%\%\%\%\%\%\	rev/min 8	Control rod travel mm 9
the eng	-load delive ne in accorda on sheet.	y ia adjuste nce with the	d on engi	ne	100	19,5-21,0	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

(1)

WPP 001/4 ALO 13,8 b

1. Edition

supersedes

PES 6 P 120 A 320 RS 354 Komb.-Nr. 0 402 046 159

ROV 375-1050 PA 314 KR

companyAllis Chalmers engine 6138 I A.C.-Nr. 743 96 184

Values only apply to test nozzle-and-holder assembly 0 681 443 022 and fuel-injection test

tubing 1 680 750 026.

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel mm	Fuel delivery cm <sup>3</sup> /100 strokes	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm	Fuel delivery  cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0	26,4-27,1	1,0			
600 600 600 200	6,0 12,0 15,0 6,0	8,6-9,8 26,3-28,2 33,8-36,2 4,2-5,2	1,0 1,0 1,0 1,0			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper rated :	speed		Intermediate	rated sp	<del>ee</del> d	Lower rated	speed	1	Stiding s	leeve travel
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm	Degree of deflection of control lever	rev/min		Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	1.0	
ca.66	1050 1100 1150 1210 1300	15,0-18,0 10,7-15,0 6,0-11,6 0-7,0	-	-	-	ca.10	250 350 450 550	6,4-8,0 3,0-5,2 1,3-2,8		_
						(3a)				

Torque control travel a =

## C. Settings for Fuel Injection Pump with Fitted Governor

Full-load d Control-ro Test oil ter		Rotational-speed (2b) ilmitation intermediate speed	high idle speed (ch)		Starting Idle switchin		travel	Control 5
rev/min	cm³/1000 strokes	rev/min 48	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
1050	210,0-216,0 (208,0-218,0)	1060-1080*	900	210,0-216,0 (207,0-219,0		130,0-170,0		
			700	238,0-244,0 (235,0-247,0		19,0-25,0		

Checking values in brackets

\* 1)mm less control rod travel than coi 2

WPP 001/4 DEE 10.1 a 2

1. Edition

PES 6 P 110 A 720 RS 370

RSV 500-900 PO/448 DR

Komb.-Nr. 0 402 076 048

company John Deere

engine 6619 T

Ail test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke

2,75-2,85 (2,70-2,90)

mm itrom BDC:

Rotational speed	Control rod travei	Fuel delivery	Difference	Control rod travei	Fuel delivery	Spring pre-tensioning itorque-control valvei
rev/min	mm 2	cm <sup>-/</sup> 100 strokes	100 strokes	mm 2	cm 9100 strokes	mm S
900	10,6+0,1	12,3-12,5	0,4			
500	6,4-6,6	1,9-2,3				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Degree of deflection of control lever	crated speed Control rod travel mm		Interme	diate rate	ed speed	Control- lever deflection in degrees 7	Lower rev/min 8	rated speed Control rod travel mm	(3) To revimin	raue control  Control rod  travel  mm   11
loose	800	0,3-1,0	-	-	•	ca. 26	500 100	6,4	900 650	0 0,7
ca. 42	1000	6,4					500 660-720	6,4 = 2,0		

The numbers denote the sequence of the tests

#### C. Settings for Fuel injection Pump with Fitted Governor

(20)	il-load stop emp_40°C (104°F) cm=/1000 strokes	Rotational- speed limitat Note changed to ) rev/min		el delivery arzoteristics cm=/1000 strokes	Startirig fi lgle rev/min	uer gelivery 5	43)	Control rod travel
900	123,0-125,0 (120,0-128,0)	945-955*	650	138,5-141,5 (135,5-143,5)	100 High 1000 Low 500	7 180,0-200, idle spee 47,0-57,0 idle speed. 19,0-23,0	d	6,4

Checking values in brackets

mm less control rad travel than col. 2

2.84

eschaftsbereich KM-Kundendienst-Kfz-Ausrustung 1980 by Robert Bosch GmbM-Postfach 50-0-7000 Stuttgart 1-Printed in the Federal Republic of Germany Iprime en Republique Federale d'Allemagne par Robert Bosch GmbM

and Governors

WPP 001/4 MAN 17,4 b 8

1. Edition

PE 10 P 120 A 520/5 LS 850 RQV 250-1150 PA 670-2

1-8-7-6-3-5-2-10-9-4 0-27-72-99-144-171-216-243-288-315°  $\pm$  0,5° ( $\pm$  0,75°)

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067.
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersectes

companMAN

engine D 2540 MLE 405 kW Komb.-Nr. 0 401 849 179

A. Fuel Injection Pump Settings .....

12 05 3 151 Porticiosing at prestroke

**Festoil-ISO 4113** 

mm (from BDC)

Zyl. 10

bott crosming at bias	1	2,95-3,15 <i>)</i>				
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
1150	11,2+0,1	18,5 - 18,7	0,5 (0,9)			
250	6,2-6,4	1,2-1,8	0,8 (1,2)			
	1					

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

deflection of control	rev/min Control rodtravel	Control rod travel mm 28	Intermediate Degree of deflection of control lever	rated sperior	Control rod travel	Lower rated Degree of deflection of control lever 7	rev/min	Control rod travel	Sliding s	mm
max. ca. 63	1210	15,2-17,8 1190-1200 1210-1240 0 - 1,0	-	•	-	ca. 12	100 250 375-	min. 7,8 6,2-6,4 435 = 2,0	800	1,7-2,0 5,6-5,9 7,8

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roe Test oil ten		Rotational-speed 2b ilmitation intermediate speed	Fuel delicingh idle s	rery characteristics 5a	Starting Idle switchir		Torque- travel	control 5
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm 9
LDA 1150	1.0 bar 185,0-187,0 (182,0-190,0		LDA 500	0 bar 119,0-121,0 (116,0-124,0		205,0-225,0 (201,0-229,0		-

Checking values in brackets

\* 1 mm less control rod travel than col. 2. 12.83

# D. Adjustment Test for Manifold Pressure Compensator

rev/min increasing pressure – in bar gauge pressure Testatn = 500 חסולטחומוול Measurement Setting Pump/governor difference (1) par mm bar Gauge pressure = Gauge pressure = 11,2-11,3 9,6-9,7 10,8-10,9 10,1-10,3 PE 10P.. LS 850 + RQV.. PA 670-2 1,0 0,65 0,54

Notes

(1) when n =

revimin and gauge pressure =

par (= maximum full-load control rod travel)

MAN 17,4 b 8

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 SCA 8,0 h 5. Edition

PE 6 P 110 A 720 RS 3034

ROV 200-1200 PA 529

Komb.-Nr. 0 401 846 732

superseaes6.83 company Scania DSI 801

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel mm	3,25-3,45) Fuel delivery cm³/100 strokes	Difference cm <sup>3</sup> / 100 strokes	Control rod travel mm	Fuel delivery  cm <sup>3</sup> /100 strokes	Spring pre-tensioning (torque-control valve) mm
700	13,2+0,1	12,9 - 13,1	0,5(0,7)			2,5 ± 0,1
225	5,5-5,7		0,2(0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

deflection	rev/min Control rod travel mm	Control rod travel mm (2a)	Intermediate Degree of deflection of control lever	rated spo	Control rod travel mm 4	Lower rated Degree of deflection of control fever 7	rev/min	Control rod travel mm 3	Sliding s rev/min 10	mm
max.	1200	15,2-17,8	-	-	-	ca. 14	225	min.7,0 5,5-5,7	150 500 850	0,5-0,8 3,7-4,3 6,2-6,4
	4,0 1 <b>5</b> 50	1395-1425 0 - 1,0				(3a)	390-2	150 = 2,0	1200	8,6

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil ten		Rotational-speed (20) limitation intermediate speed	Fuel delivery characteristics (5a) right idle speed (5b)		Starting Idle switchin		Torque- travel	Control 5 Control rod travel
rev/miñ	cm³/1000 strokes	rev/min 4a	rav/min	cm <sup>3</sup> /1000 strakes 5	rev/min	cm <sup>3</sup> /1000 strokes 7	rev/min	mm 9
LDA 700	0,9 bar 129,0-131,0 (127,0-133,0)	1240 - 1250*	LDA 1200 LDA 500	0,9 bar 134,5-137,5 (132,0-140,0) 0 bar 79,0-83,0 (77,0-85,0)		190,0-240,0 = 20,0-21,0 mm RW	-	-

Checking values in brackats

\* 1 mm less control rod travel than col. 2

<sup>\*\*</sup> In case valve-spring spread is higher, change the initial tension accordingly.

# D. Adjustment Test for Manifold Pressure Compensator

SCA 8,0 h

Pump-governor	Setting	Measurement	diminution Control rod travel- difference
	Gauge pressure = bar	Gauge pressure = t	par .mm (1)
PE 6 PRS 3034 + RQVPA 529	0,90	0 0,44 0,29	13,2 - 13,3 11,3 - 11,4 12,7 - 12,8 11,7 - 11,9
			:

Notes

(1) when n =

revimin and gauge pressure =

bar ( = maximum full-load control rod travel)

WPP 001/4 MWM 39,8 c

2. Edition

(3) PE 6 P 130 A 300 LS 3052

(2) PE 6 P 130 A 320 LS 3052 RSUV 300-750 P 9 A 332/1 R

supersedes 1.82

company MWM - Südbremse

TBD 602-V 12 K

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Komb.-Nr. 0 401 816 703 (1) 0 401 876 711 (2)

mm (trom BODei RW = 21.0 mm / 0 401 816 705 (3)Port closing at prestroke

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm³/100 strokes	cm <sup>3</sup> / 100 strokes	mm 2	cm <sup>3</sup> /100 strokes	mm 6
700	12,0+0,1	34,7 - 35,1 (34,4 - 35,4	0,5 (0,9)			
300	5,3-5,5		0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Upper Degree of deflection of control lever		Control rod travel mm 3	intermediate Degree of deflection of control lever		Control rod travel mm	Degree of deflection of control lever	rev/min	ed Control rod travel mm 9	3 Tor	que control Control rod travel mm
lose	800	0,3 - 1,0	-	-	•	ca.29	300	4,9	700	12,0+0,1
	X =	5,25					300	5,3-5,5	325 450	13,2+0,6 12,0+0,1
ca.70	11,0 4,0 980	790 - 800 815 - 345 0,3 - 1,7					325-38	5=2,0mm		

The numbers denote the sequence of the tests

without(1),(3) and

### C. Settings for Fuel Injection Pump with Fitted Governor

(2)

2 Full-lead stop	6 Rotational- speed limitat		delivery racteristics	Starting Idle	fuel delivery	Sa Idi	e stop
Test oil temp 40°C (104°F)  rev/min   cm³/1000 strokes   1   2	Note changed to rev/min 3	rev/min	cm <sup>3</sup> /1000 strokes 5	revimin	connections of the connection	i ev/min 8	Control rod travel mm
The full-load deliv in accordance with Pumps (1) and (2) o	the engine in	ispect	ion sheet.		19,5-21,0		

Checking values in brackets

1 mm less control rod travel than col. 2

# **Test Specifications** Fuel Injection Pumps and Governors

WPP 001/4 MWM 19,9 c 3. Edition

(1) PE 6 P 130 A 320 RS 3057 (2) PE 6 P 130 A 300 RS 3056

RSUV 300-750 P 9 A 333/1R

supersede8.82

company MWM - Südbremse TBD 601-6 K

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Komb.-Nr. 0 401 876 712 (1)

A. Fuel Injection Pump Settings

0 401 816 704 (2)

Port closing at prestroke

(2.75-2.95)

mm (from BDC) bei RW = 21,0 mm

Rotational speed	Control rod	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
ev/min	mm	cm <sup>3</sup> /100 strokes	cm <sup>3</sup> / 100 strokes	mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	12,0+0,	34,7 - 35,1 (34,4 - 35,4)	0,5 - (0,9)			
		` ' '				
300	5,3-5,	5 4,8 - 5,6	0,0 (1,2)	1		

Adjust the fuel delivery from each outlet according to the values in [

**B.** Governor Settings

Upper Degree of deflection of control	rated speed	Control rod travel	Intermediate Degree of deflection of control	rated spe	Control rod travel	Degree of deflection of control	r rated spe	Control rod travel		Control rod travel
lever	rev/min	mm	lever	rev/min	mm 6	lever	rev/min	mm	rev/min 10	11
loose	800 x =	0,3-1,0 ,75		19	-	ca.28	300	4,9	700 325 450	12,0+0,1 13,2+0,6 12,0+0,1
ca. 66	11,0 4,0 980	790-800 815-845 0,3-1,7								

The numbers denote the sequence of the tests

without (2) and

C. Settings for Fuel Injection Pump with Fitted Governor

2 Full-loa	d stop	6 Rotational- speed limitat.		delivery racteristics	Starting/	fuel delivery	(5a) Idle	estop
Test oil temp rev/min	oil temp 40°C (104°F)  nin cm³/1000 strokes 2  Note changed to rev/min 3		changed to		rev/min	cm <sup>3/1000</sup> strokes 7 mm RW	rev/min 8	Control rod travel mm 9
the e	ull-load deli ngine in acco ction sheet.	very ia adjust rdance with	ted o	n gine	100	19,5-21,0		

Checking values in brackets

\* 1 mm less control rod travel than col. 2

**Testoil-150 4113** 

# **Test Specifications** Fuel Injection Pumps 2 and Governors

WPP 001/4 MB 14,6e1 2. Edition

PE 8 P 110 A 320 LS 3802-1

RO 300/1150 PA 187-11

supersede 83 company Daimler-Benz

Komb.-Nr. 0 401 848 751

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$ 

OM 422 206 kW

See Service Information VDT-I-401/102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from 8DC) $7\sqrt{1}$ , 8: RW = 9.0-12.0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery  * cm <sup>3</sup> /100 strokes 3	Difference cm³/ 100 strokes	Control rod travel mm 2	Fuel delivery  * cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,3+0,1	13,1-13,3	0,4(0,75)	12,3+0,1	13,1-13,3	
300	8,5-8,7	1,5-2,1	0,45(0,75	)8,5-8,7	1,5-2,1	
600	-	C, Sp. 4 u. 5	(0,9)	-	C, Sp. 4 u.5	
	* with r	eturn throttlc	(1)	*	without return	throttle (2)

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

Checkin	g of slider	Full-load :	speed re	gulation		Idle spec	ed regula	ation		Torque o	control	
PRG che	ck (1)	Setting po	int	Test spec	cifications $(4)$	Setting p	oint	Test spe	cifications $(5)$			(3)
rev/min	Control rod travel mm 2	rev/min	Control rod travel m.m 4	Control rod travel rn-rn 5	rev/min	rev/min	Control rod travel mm	rev/min 9	Control rod travel mm	rev/min 11	Control rod travel mm 12	
650	13,0-14,0	650	13,5	11,3	1195-1210	300	8,6	100	min. 10,0	-	-	
			İ	4,0	1235-1265			300	8,5-8,7		 	
				1350	0-1,5			430-4	70 = 2,0		İ	
								500	max. 1,8			
	ontrol travel					<u> </u>	1	195-12	10 min -1		1 mm less c	ontro

Torque-control travel on flyweight assembly dimension a =

Speed regulation: At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on ontrol lever ap. 40°C (104°F)	(2-)		Starting f	d Control	
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	rev/min	cm <sup>3</sup> /-1000 strokes 5	rev/min	rod travel cm <sup>3</sup> /1000 strokes / mm 7
(1) 1150	131,0-133,0 (128,5-135,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

B. G	overnor	Settin	ıgs						MB 14,6 e	1		2 -
Checkin PRG che	Control rod	Full-loa Setting rev/min 3	Control 1 rod travel	. Test spe Control	cilications (	idle spe Setting	Contral rod travel	Test sp	ecifications 5 Control rod travel	Torque o	Control ro travel mm	<sub>a</sub> 3
650	13,0-14,	0 650	13,5	4,0	1195-121 1235-126 0 - 1,	5	8,6	300 430	min.10,0 8,5-8,7 -470 = 2,0 max. 1,8	•	-	
on flywe	control travel ight assembly dir			mm ection					210 min <sup>-1</sup> vernor		1 mm iess	control od trave
	d delivery on or control lever		(2) Cont	iroi rod sto	Op (3a) Fu	ei delivery c	naracter	istics	3b Starting to	uel delive: Ed	ту	6

governor	delivery on control lever mp=40°C (104-F)	(2) Contro	rod SIOD	(3a) <sup>f</sup>	Fuel Gein	very characteristics	3b Starting Idle spe	tuel delivery ed	Santrai
rev/min	: cm²/-1000 strokes	rev/mii	ר	,	evimin	cm :=1000 strokes	:rev/min	cm /1000 stroke	
1	2	3			1	5	<u> 6</u>	<del></del>	
(2) 1150	131,0-133,0 (128,5-135,5		600		600	112,0-116,0 (109,0-119,0)	100	130,0-150 (126,0-154	
	!								

Checking values in prackets

#### **B. Governor Settings**

Checkin	g of slider	Full-load					Idle spe			cifications (5)	Torque o	control 3
rev/min	Control rod	Setting p	Control rod travel	Test spe Control rod travel mm	rev/min	(4)	Setting (	Control and travel	revinin	Control rod travel mm	rev/min	Control rod travel
	+	<del></del>						******				
			:		1							
		!	,	:		,						
			:	:	:							
	•											
forque-c	control travel	<u> </u>		<u> </u>	<u> </u>		and requi					1 mm less contr

#### on flyweight assembly dimension a = C. Settings for Fuel Injection Pump with Fitted Governor

governor	delivery on control lever imp 40°C (104°F)	(2) Control rod stop	(3a) Fuel d	elivery characteristics	3b Starting to	uel delivery d	6 Control rod travel
rev/min	: cm <sup>3</sup> /-1000 strokes	rev/min	rev/m	n cm <sup>3</sup> /=1000 strokes	rev/min	cm <sup>3</sup> /1000 strok	ies/mm
1	2	3	+4	5	66	7	

WPP 001/4 MB 14,6c1 2. Edition

n

PE 8 P 110 A 320 LS 3802-1

Rnv 300-1150 PA 524-9

supersede9.83
company Daimler-Benz

Komb.-Nr. 0 401 848 752

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je  $45^{\circ} \stackrel{+}{=} 0.5^{\circ} (\stackrel{+}{=} 0.75^{\circ})$ 

See Service Information VDT-I-401/102

engine OM 422 206 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at pres		4,0 -4,1 3.95-4.15)	mm (from BDC)	Zv1. 8:	PM = 9.0 - 12.0	mm
Rotational speed	Control rod travel	Fuel delivery *	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm 2	cm <sup>3</sup> /100 strokes	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3.	mm 6:
1150	12,3+0,1	13,1-13,3	0,4(0,75	12,3+0,	1 13,1-13,3	
300	8,0-8,2	1,5- 2,1	0,45(0,7	ŀ	2 1,5-2,1	
600	, <b>-</b>	C, Sp. 4 u. 5	(0,9	<b>-</b>	c, Sp. 4 u.5	
	* with r	eturn throttlc	(1)		* without ret	urn throttle (.')

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

STA CONTROLL

deflection	rev/min Cantrol	Control rod (travel	demection	e rated sp	Control rod travel	Lower rate Degree of deflection of control	d speed	Control rod travel	Sliding s	leeve travel
of control	rod travel mm 2	rev/min (2	a) of control	rev/min 5	mm (4	1	rev/min	mm (3)	rev/min 10	mm 11
max.	1150	15,2-17	,8 -	-	-	ca. 2	1 100	min. 9,7	250	1,0-1,2
ca. 66		1190-120 1235-126				330-46 (3a)	300	8,9-8,2		3,4-3,7 4,9-5,3 7,6

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roc Test oil tem			Fuel deliv	ery characteristics (5a)	Starting Idle switchir	. —	Torque- travel	Control rod
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	mm 9
	131,0-133,0 (128,5-135,5	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0		-

Checking values in brackets

\* 1 mm less control rod travel than col-2



Upper rated s	peed			intermediate	e rated spe	ed		Lower rated s	beed		Sliding st	eeve travel
Degree of deflection	rev min Control	Control rod	(a)	genection		Control roo		Degree of deflection of control		Control ro travel	$\sim$ 1	1
of control ever	rogtravei mm	t6Atwin Jiw	(2a)	ot control lever	,6A1WIU	mm	(4)	tever	rev/min	mm	(3) rev/min	mm
•	2	3	_	4	5	6		- (	8	9	10	11
max.	1150	15,2-1	7,8	_	-	-		ca. 21	100	min.	9,7 250	1,0-1,2
ca. 66	11,3	1190-1 1235-1	200 265			; ;		:	300	8,0-	850 850 1150	3.4-3,7 4,9-5,3 7,6
:	•			:				330-465			·	
•		*						За				

C. Settings for Fuel Injection Pump with Fitted Governor

rest on ter	mp 40°C (104°F) (2	intermediate spee	(4a)	ev/min	cm1/1000 strokes	revimin	cm /1000 strakes	revimin	travel
rev/min	cm <sup>3</sup> /1000 strokes	iev/min 3			5	5		8	9
(2) 1150	131,0-133 (128,5-135		* :	600	112,0-116,0 (109,0-119,0		130,0-150,0 (126,0-154,0)		-

Checking values in brackets

\* 1 mm less control rod fravel than col. 2

**B.** Governor Settings

Upper rated	speed			Intermediate	e rated spe	ed		Lower rated	speed			Sliding sl	eeve travel
Degree of deflection		Control rod	(1a).	Degree of deflection		Control root travel	t	Degree of deflection		Contro	rod		1
of control	rod travel		(2a)	of contro- lever	rev/min	mm	4	of control lever	rev/min	mm	3	rev/min	mm
Te ve		2		: : <b>4</b>	5 .	6		7	88	9		10	11
1	2	3										i	
	1			•				•					
	i							1					
		1										1	
•	i	i		į				İ					
	}			1									
		•											
	!	1						(3a)	1			1	
	:	•							<u> </u>			1	<u> </u>

C. Settings for Fuel Injection Pump with Fitted Governor

Test oil tem	1 5100 np 40°C (104°F) 2	intermediate speed	edate speed		idle switchir	ng point	travel	Control rodi	
rev/min	· cm <sup>3</sup> /1000 strokes	rev/min (4a)	rev/min	cm <sup>3</sup> /1000 strokes	rev/min		rev/min	mm	
1	2	3	4	5	6	7	18	9	
							1		
		:	:			1			
	1	•				!	:		
		1	:	1			ļ.		
•	1				1	-			
•		!			1				

Checking values in brackets **En** 

\* 1 mm less control rod travel than col 2

WPP 001/4 MB 18,3 f 2. Edition

PE 10 P 110 A 320 LS 3818

RQ 750 PA 636

supersede 3.83 company Daimler-Benz OM 423

197 kW (268 PS)

Komb.Nr. 0 401 849 708

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC = RW 9,0 - 12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm <sup>3</sup> /100 strokes	100 strokes	· mm	cm <sup>3</sup> /100 strokes	mm
1	2	3	4	2	3	6
700	13,5+0,1	13,4-13,6	0,4(0,8)			
300	8,5-8,7	1,4-2,2	0,4(0,7)	!	!	
	j 	1		· F		
	1		i	1	Ì	•
	1			i		

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

thecking of slider TRG check The Setting point			_	cifications (4)	Idle speed regulation Setting point   Test specifications (5)				Torque control		
Control rod travel mm	rev/min	Control rod travel rnm	Control rad travel rnin 5	rev/min	rev/min 7	Control rod travel rmm 8	rev/min	travel	rev/min	Control rod	
	-	-	12,5 4,0 900		-	-	_	-	-		
							! !	)-755 min			

Torque-control travel on flyweight assembly dimension a =

Speed regulation. At

1 mm less control rod travel

#### C. Settings for Fuel Injection Pump with Fitted Governor

	elivery on control lever np. 40°C (104°F)	Control rod stop	Fuel delivi	ery characteristics	Starting t	tuel delivery
rev/min	cm <sup>3</sup> /-1000 strokes	rev/min 3	rev/min	cm <sup>3</sup> /-1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes / mm
70)	134,0-136,0 (131,0-139,0)	•		-	100	140,0-160,0 (136,0=164,0)

Checking values in brackets

2.84

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Geschaftsbereich KH. Kundendienst. Kfz-Ausrustung. ₹ 1980 by Robert Bosch GmbH, Postfach 50. D-7000 Stuitgart 1. Printed in the Federal Republic of Germany Imprime en Republique Féderale d'Allemagne par Robert Bosch GmbH.

# **Test Specifications** Fuel Injection Pumps 1 and Governors

WPP 001/4 MB 21,9 b 3. Edition

PE12P120A320LS3819-1

RQV 350-1150PA493

PA 493-2 1- 5- 9- 8- 3 - 4 - 11 -10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315 +0,5 (+0,75)

supersede3.83 sompany Daimler-Benz OM 424 A 390 kW (530 PS)

Komb.-Nr. 0 401 840 710

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Port closing at prestroke (3.95-4.15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm <sup>3</sup> /100 strakes 3	Difference cm <sup>3</sup> / 100 strokes 4	Control rod travel mm. 2	Fuel delivery cm <sup>3</sup> /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1150	11,1+0,1	15,9-16,1	0,5(0,8)			
350	4,8-5,0	1,4 - 2,0	0,8(1,2)			
			ply to te 901 019 50 067.	st nozzle and fuel-	-and-holder injection test	

Adjust the fuel delivery from each outlet according to the values in [

#### **B. Governor Settings**

Upper rated s	peed rev/min	Control red (18)	Intermediate	rated sp	eed Control rod				Sliding s	leeve travel
deflection of control	Control rod travel mm	travel	deflection of control	rev/min	mm 4	deflection of control lever 7	rev/min	travel 3	rev/min	mm 11
max.	1150	15,2-17,8	-	-		ca.14	100	min.8,5	300	0,9-1,1
ca. 64	10,1 4,0	1190-1200 1280-1310					350		580 870 1150	3,5-3,7 5,2-5,4 7,8
	1375	0-1,0				400-600 ③				

Torque control travel a =

#### C. Settings for Fuel Injection Pump with Fitted Governor

Full-load de Control-roo Test oil ten			Fuel delivery characteristics 53 high idle speed 5b		Starting Idle switchin	. •	Torque- travel	control 5
rev/min	cm <sup>3</sup> /1000 strokes	rav/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	travel mm
1	2	3	4	5	6	7	8	9
LDA 1150 <b>11</b> 50	0,6 bar 159,0-161,0 (156,0-164,0) 118,0-121,0 (115,0-164,0	þ	LDA 650 LDA 500	0,6 bar 160,0-165,0 (15 <b>7</b> ,0-169,0 0 bar 127,0-129,0 (124,0-132,0		140,0-160,0 (136,0-164,		_

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

\*\* Ajusted at the inner lever of the reduced-delivery stop

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# D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b

- 2 -

Test at n. = 500	revimin decreasing presi	sure – in bar gauge pressure		·····
Pump governor	Setting	Measurement	diminution Control rod travel- difference	
	Gauge pressure =	bar Gauge pressure =	bar mm (1)	<del></del>
PE12PLS3819-1 +PA 493	0,38	0,60 0 0,32	10,8-10,9 11,1-11,2 10,0-10,2 10,1-10,3	
		,,,,,		
	Į.	•	ž	
Notes	rey/min and	par i = maximum tull-load	control rod travels	

40

WPP 001/4 SCA 14,2 e

1. Edition

PE 8 P 120 A 920/4 LS 7002-1 RSV 350-1050 P 1/504

1-2-7-3-4-5-6-8 je  $45^{\circ}$   $\stackrel{+}{=}0,5^{\circ}$  ( $\stackrel{+}{=}0,75^{\circ}$ )

Values only apply to test nozzle-and-holder assembly: 688 901 019 and fuel-injection test tuping\_1,680,754,815epscn Fuer Injection Pump Test Benches and Testers

Seab-Scania

Komb.-Nr. 0 402 678 801

A. Fuel Injection Pump Settings 5,0-5,1

Port closing at prestroke

Testoil CO 4113

5,0-5,1 (4,95-5,15)

mm ... 300 RW=9,0-12,0 mm

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rad trave	Fuel delivery	Sprind pre tensioning (torque-control valve)
revimin	mm 2	cm <sup></sup> 00 strokes 3	om 100 strokes 4	2	cm···100 strokes 3	mm 6
700	13,2+0,1	18,7-18,9	0,6(0,9)			1
350	1,4-4,6	1,4-1,8	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

#### **B.** Governor Settings

	r rated speed Control rod travei mm		interme	diate rated	speed 6	Control lever deflection in degrees 7	-	rated speed Control rod travel mm	(3)	rque control Control rod travel mm
loose	800 x =	0,3-1,0 6,0	-	-	-	ca.30	350 350 440-50	4,4 4,4-4,6 10 = 2,0	-	-
ca. 64	12,2 4,0 1300	1090-110 1160-119 0,3-1,7								

The numbers denote the sequence of the tests

#### C. Settings for Fuel Injection Pump with Fitted Governor

	emp 40°C (104°F) cm1/1000 strokes	Rotational- speed limitat Note changed to rev/min	1.341	ei delivery aracteristics cm:/1000 strokes 5	laie	cm=1000 strokes	•	Stop Control rod travel mm 9
700	187,0-189,0 184,0-192,0)	1090-1100*	1050	183,0-191,0 (181,0-193,0)	100	240,0-290 =20,0-21, mm RW	,0 <b>-</b>	-

Checking values in brackets

# 1 mm less control rod travel than col. 2

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Geschaftsbereich KH. Kundendienst. Kfz: Ausrustung.

1. 1980 by Robert Bosch GmbH. Postfach 50. D-7000 Stuttgart 1. Printed in the Federal Republic of Germany Imprime en Republique Federale d. Allemagne par Robert Bosch GmbH.

# Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOG 22,6 a

2. Edition

PE 8 P 120 A 520/4 RS 7010

RQV 250-850 PA 686

1 - 4 - 6 - 2 - 5 - 3 - 7 - 8 je  $45^{\circ} \pm 0.5^{\circ} (\pm 0.75^{\circ})$  Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

company Volgograd 8 DWT 330 engine 243 kW

Komb.-Nr. 0 402 648 809

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

#### A. Fuel Injection Pump Settings

Rotational speed	Control rod travel	Fuel delivery	Difference cm <sup>3</sup> /	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)	
rev/min	mm 2	cm <sup>3</sup> /100 strokes 3	100 strokes	mm 2	cm <sup>3</sup> /100 strokes 3	mm 6	
850	13,0+0,	19,4-19,6	0,5(0,9)			_	
250	5,0-5,2	1,7-2,3	0,8(1,2)				

Adjust the fuel delivery from each outlet according to the values in

#### **B. Governor Settings**

Opper lated speed						Lower rated speed  Degree of Control rod			Slicting sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min 2a	Degree of deflection of control lever	rev/min 5	travel mm 4	deflection of control lever 7	rev/min 8	travel mm 3	rev/min	mm 11
max.	935	15,2-17,8	-	-	-	ca. 9	100	min.6,6	250 650	1,1-1,3 4,5-4,8
ca.61	12,0 4,0 1100	890-900 950-980 0-1,0				285-390	1	5,0-5,2   00 = 2,0	850	7,2
						(3a)				

Torque control travel a =

നന

### C. Settings for Fuel Injection Pump with Fitted Governor

Fuli-load d Control-ro- Test oil ter		Rotational-speed (20) limitation intermediate speed	Fuel deire high idle s	ery characteristics (58)	Starting Idle switchin		Torque- travel	Control 5  Control rod travel
rev/min	cm³/1000 strokes	rev/min 4a	rev/min	cm <sup>3</sup> /1000 strokes	rev/min	cm <sup>3</sup> /1000 strok <del>es</del>	rev/min 8	mm 9
LDA 850	0,7 bar 194,0-196,0 (191,0-199,0)	890-900*	LDA 500	0 bar 125,0-127,0 (122,0-130,0)	100	245,0-265,0 (241,0-269,0)	-	-

Checking values in brackets

\* 1 mm less control rod travel than col. 2

2.84

BOSCH

# D. Adjustment Test for Manifold Pressure Compensator

**70**G 22,6 a

Pums governor	Setting	Measurement	diminution Control rod travel- difference		
	Gauge pressure =	par Gauge pressure =	par mm (1)		
PE8PRS7010	0,70	:	13,0 - 13,1		
+ RQVPA686		0	10,0 - 10,1		
		0,30	12,1 - 12,3		
		0,16	10,6 - 11,0		
		g			

(1) when n =

revimin and gauge pressure =

par ce maximum full-load control rod travel)